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The Fruit Industry of Chile

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UNITED STATES DEPARTMENT OF AGRICULTURE

WASHINGTON, D. C.

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THE FRUIT INDUSTRY OF CHILE

The Central Valley of Chile has such a wide range of latitude and is so diversified in climate and soil that excellent fruits of all kinds - from Temperate Zone to tropical - can be grown there. The fruit industry, though small in comparison with that of the United States, is of comparable importance in the national economy. Despite the mineral wealth of Chile, 60 percent of the population is directly dependent on agriculture for a livelihood; and the fruit industry contributes no small part to the total value of agricultural production. During the 5 years from 1935 to 1939, fruit exports represented approximately one-tenth of total agricultural exports. The fruit industry is capable of considerable expansion, but the lack of markets will prevent any attempt to increase production, in the near future at least. The European war has already raised the problem of surpluses of some fruits, and the Chilean grower is becoming more and more dependent upon the markets of other American countries, especially those of the United States. Chile, on the other hand, offers only a very limited market for the fruit of the United States.

THE LAND AND THE PEOPLE

Like a shoestring stretched along the western coast of South America lies a country whose unique shape is familiar to every student of geography. From Peru south to Cape Horn this ribbon of land covers a distance of 2,600 miles. It varies in width from 57 miles in the narrowest part to 250 miles at its widest, with an average width of about 110 miles. Although Chile is mountainous throughout, small valleys tucked in between the ocean and the crest of the Andes are cultivated.

The Andes, a tremendous mountain barrier, extends the entire length of the country. In the central and northern part they lift their heads to a height of about 23,000 feet, while toward the south they sink to from 10,000 to 12,000 feet, eventually disappearing beneath the sea, only the peaks showing in the Diego Ramirez Islands south of Cape Horn. Parallel with the main chain of the Andes, the Cordillera, a smaller mountain range, follows the coast line a few miles inland; and it is between these two ranges that the valleys are formed which support the little Republic.

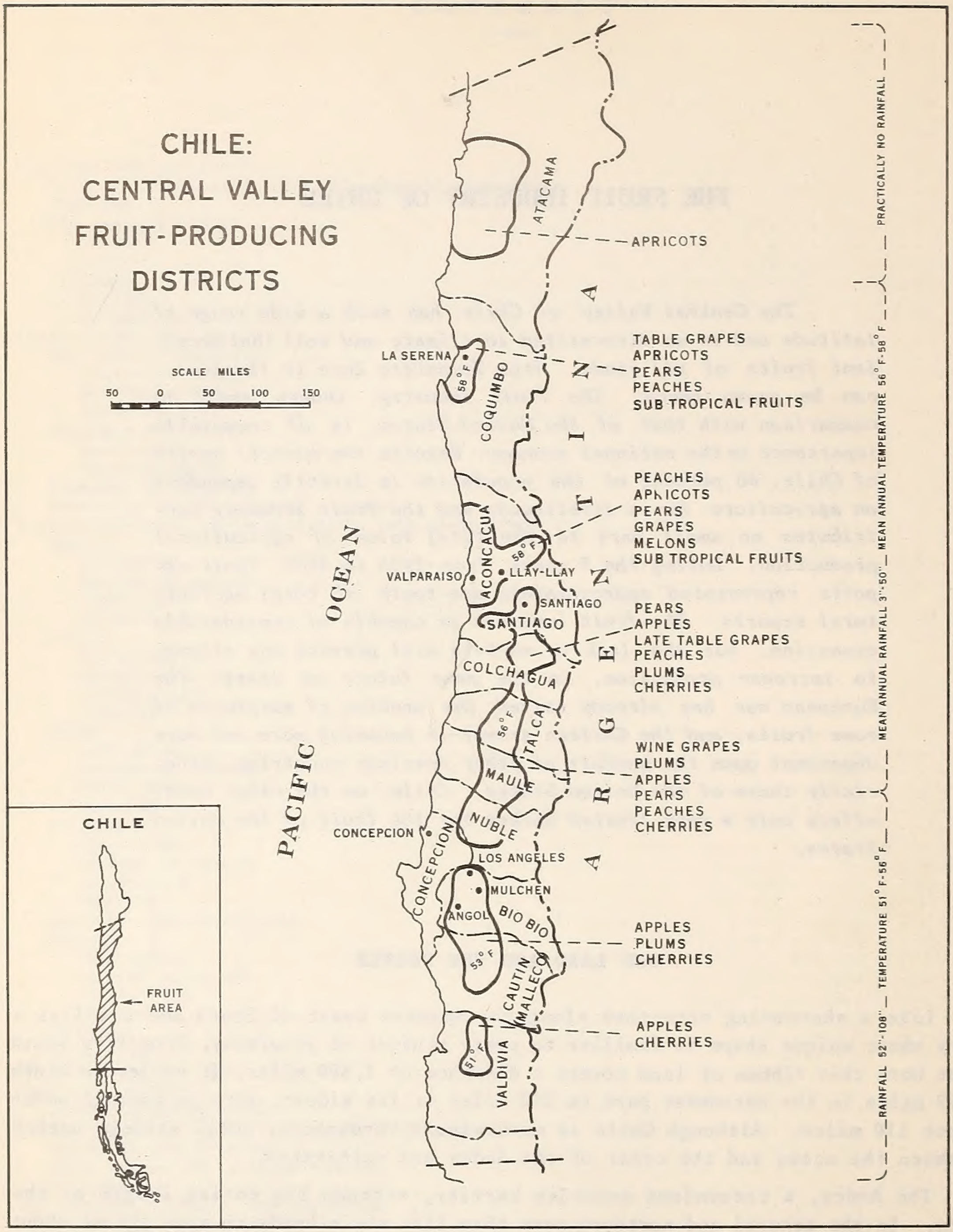

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Figure 1.-The Central Valley of Chile.

Chile is composed of three distinct geographical regions, the northern, central, and southern. The northern region, which extends for a distance of some 600 miles, is very arid and contains the famous Chilean nitrate beds. Except for a few isolated mountain valleys it is of no importance from an agricultural point of view. The second and most important region is the Central Valley, which extends from La Serena about 200 miles north of Santiago to Puerto Montt, some 800 miles to the south. The average width of this broken valley is only 25 or 30 miles. This is the great agricultural region of Chile, and in it most of the population of the country is concentrated.

The third, or southern, region about 1,200 miles in length, is heavily forested and given over to lumbering and grazing. In contrast to the north where the rainfall is next to nothing, the south is extremely wet and has an annual rainfall of 100 inches or more.

Over 70 percent of the land surface of Chile is mountainous, much of it standing almost on end. Only 7 percent of the land is suitable for cultivation. About 40 percent of the country is so parched and dry that even desert plants are dwarfed and have difficulty in maintaining life. More than a third is so wet, damp, and cold that settlers have not been attracted to it.

In many respects the Central Valley of Chile bears a close resemblance to the Pacific coast of North America, but it is on a much reduced scale. The northern part is similar to Death Valley in California and parts of Arizona, where rainfall is practically unknown. The central part is similar to the fertile valleys of California, the Imperial, Santa Clara, and San Joaquin, but again in miniature. As one journeys south toward the Lake Region, the roll of the country becomes gentler and vegetation denser. In the Lake Region the trees grow large, and the tangle of underbrush presents an almost impenetrable jungle. This part of Chile is thus comparable to western Oregon and Washington, the lower Columbia and Pugent Sound country. Tremendous larch trees, indigenous to the country, with diameters 8 to 10 or 12 feet at the butt, are reminiscent of the North American forests of redwood and Douglas fir. Cut-over land is soon covered by a heavy growth of evergreen blackberry bushes, 10 to 12 feet high, growing luxuriantly and threatening to take over by force the surrounding country. The topography of Chile is greatly varied, with many lakes, mountains, rivers, valleys, fiords, glaciers, deserts, and forests. Also with respect to climate there is little lacking in variety from extreme heat to extreme cold and from no rain to an almost continuous downpour. It is a fascinating country.

The native Indians of Chile, Araucanians, were a determined, warlike people, similar in many respects to some of the North American tribes. Unlike the Indians of the Tropics, they were not easy to conquer. More than 300 years were required to subdue them. Though they were eventually overpowered, their spirit was not broken, and they were never reduced to a state of servility as were the natives in the Tropics.

Because of the intermarriage of the Indians and the Spaniards, some of the qualities of the Araucanians manifest themselves in the Chilean people today. Unlike the white people who conquered the tropical natives and made them slaves, the Chilean whites had to do their own work. The climate of Chile has also exerted a great influence upon the character of the people. It is stimulating and has produced a vigorous, active race, unafraid of work. The Chilean is modest, unassuming, friendly, hospitable, and eager to progress. These qualities, combined with a favorable climate, are bound to make for future progress in Chile.

Because of their climate, the northern and the southern thirds of Chile are unimportant from an agricultural point of view. The central part, however, possesses an unusual climate that permits the successful cultivation of an extensive range of agricultural crops.

Lack of adequate transportation facilities is still a great handicap to the country as a whole. With a coast line of about 2,600 miles and no part of the country more than 250 miles from the ocean, the outlook of the people has naturally been toward the sea. Yet, despite the fact that many ports have been built, some of them at a great cost, they are all exposed to the storms that come from the north and frequently result in serious damage to shipping.

Chile has less than 6,000 miles of railroad, about one-half of which is in the line running parallel to the coast. The system has been thus ably described.[1]

> The railroad pattern of Chile is governed by the peculiar shape of the country. Whereas the railway system of Argentina is essentially a great fan with its handle at Buenos Aires, that of Chile may be compared to a herringbone.

The Central Valley has very good rail facilities. Good service is maintained from Santiago south to Puerto Montt, and the electric service operating between Santiago and Valparaíso is unexcelled anywhere. Many short lines branch from the central railroad, piercing the foothills of the Cordillera or running to one of the many ports scattered along the coast.

Highways are still a thing of the future. The road connecting Valparaíso and Santiago is very good and a fair sample of what highway construction consists of in a country possessing such a rugged terrain. Most roads, however, are bumpy and dusty in the dry season and muddy in the wet. Many main roads have been graveled in the center track used by fast-moving traffic. On either side, however, are narrow trails used by the plodding oxen. Where roads have not been graveled, the dust is several inches deep and pours through the floor boards and openings of a car like a smoke screen. The old model-T Ford is perhaps the most practical for Chilean roads, but it is by no means comfortable.

Because of the topography of the country, road building is not only difficult but very expensive. Furthermore, as Chile is a country of large landowners, the burden of costs falls on relatively few people. A large part of the transportation from farm to railway station is done by oxen; and, since speed is no great factor and distances are comparatively short, fast roads are not an economic necessity. The larger cities and ports are adequately served by rail, and commodities move fairly rapidly from shipping point to market or port. Also, transportation costs are very low.

Size of Landholdings and Character of Landowners

Sixty percent of the people in Chile are living on the returns from agriculture, which means that 7 percent of the land must support 60 percent of the population. There are no industries in Chile to speak of; consequently agriculture is called upon to support the great bulk of the population. Agriculture in Chile is conducted on an extensive rather than an intensive scale. This is especially true of general farming and less so of specialized crops, such as grapes, tree fruits, melons, and truck. A large part of Chile's farm land is being heavily exploited.

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[1] WHITBECK, R. H. WILLIAMS, FRANK E., and CHRISTIANS, WILLIAM F. ECONOMIC GEOGRAPHY OF SOUTH AMERICA. Ed. 3, 469 pp. illus. New York and London. 1940. (See p. 218.)

Chile, like most South American countries, is a country of large landowners. It is said that one-half of 1 percent of the people own between 55 and 60 percent of the farm land. About 90 percent of the farms are over 500 acres in size; and although many of the large holdings have been divided among heirs after the death of the original owner, the country is in the hands of a comparatively few families. Most landowners live in the cities, where life apparently is more attractive to them than on their estates. The farms are commonly run by managers, who are given a pretty free rein. The owners are interested largely in net returns and do not wish to encounter the disagreeable features of farm life. Where the owner of a large estate lives on his place, however, the business is run along quite efficient lines. The financial position of many of the large owners is becoming increasingly difficult, and the run-down conditions found on many farms is due to lack of funds rather than to carelessness or indifference on the part of the owner.

The homestead law in Chile has provided small pieces of land for farmers in some districts, in the southern part of the Central Valley, for example. Here a very strong German influence prevails. This area proved unattractive to Spanish and Italian colonists, and to settle the country the Government encouraged immigration from Germany. In 1860 a large number of German families emigrated to this region, where they took up homesteads. When they arrived they found a country covered with dense forest, in fact, almost impenetrable jungle. The size of a Government grant depended largely upon the size of a man's family. Since the Government was interested primarily in getting the land cleared and into production, the holdings granted were very liberal. It was believed that the larger the holdings the more land would be cleared and developed. The plans of the Government have been carried out, for the settlers have proved excellent farmers. They are naturally industrious and thrifty. That region today is the outstanding dairy section of the country. Climatic conditions are such that fine pastures are produced when the land is once cleared and the undergrowth removed. Unlike those in most of Chile, farm owners in the southern district live on their farms. The towns and villages in this district are typically Germanic. German, rather than Spanish, is the spoken language. Imported articles found in this section are practically all of German origin. From pencils and ink to automobiles and heavy machinery, all bear the "made in Germany" stamp.

Farm Labor

Wages received by farm laborers vary from district to district and to some extent with the employer. They also vary considerably according to the type of work done. In the grape districts ordinary labor receives about 6 pesos (18 cents) a day, while those engaged in more exacting types of work receive up to 10 pesos (30 cents). The latter is also the rate for orchard labor and for workers in the melon fields. Farm laborers who live on the farm receive from 4 to 5 pesos (12 to 15 cents) but in addition are provided with a house and a small garden and are permitted to keep two animals free - a horse and a cow. The animals are fattened, or at least conditioned, and every few weeks traded. With these perquisites it is estimated that the wages really amount to approximately 14 pesos a day.

The peons often become closely attached to the estates on which they were born and raised, and never leave them. There is seldom anywhere else for them to go, in fact; and frequently they are so indebted to the owner that they could not leave. Large estate owners are inclined to regard the peons as subnormal people, with opportunities of which they fail to take advantage. Many peons seem to prefer to earn just enough to enable them to eat and to buy wine. They spend every peso they can spare for cheap wine or a drink made from cane. Higher wages, it is claimed, means less work; and, if a peon's absolute necessities call for but 30 or 40 pesos a week, he will not work to earn more. If he can earn as much in 4 days as he formerly did in 6, he stays home and gets drunk the other 2. There is much drunkenness in Chile among the lower classes, a situation deplored by the better classes who commonly refer to it as the curse of the country. The living conditions of the lower classes are very primitive - adobe houses without floors or windows, furnished with only the barest of necessities.

Education is compulsory in Chile, and large landowners must provide schools on their farms if children are unable to get to the schools in the village. The owner, in fact, is held responsible for the education of his laborers' children.

The Central Valley

The Central Valley is the heart of Chile and the center of all activity. It extends from La Serena to Puerto Montt, a distance of about 800 miles. The entire district, including large areas of untillable land, is less than 100,000 square miles in extent. The country is very narrow in this middle part, 25 to 30 miles wide, and is broken into inumerable small valleys. The valley floors are almost level, but slope gently toward the sea. They are planted to fruit trees, vines, and melons. Some parts of the Central Valley are very precipitous, so that cultivation is impossible, while others are rolling and given over to pastures and the cultivation of cereal crops. Many rivers, their headwaters originating in the Andes and the Western Cordilleras, flow across the valley floors, cutting their way through smaller mountain ranges to the Pacific. These rivers constitute the arteries through which flows the lifeblood of the country. But 7 percent of the land area of Chile is tillable, and two-thirds of this 7 percent is in the Central Valley. The valley not only produces sufficient food for all Chile's requirements but is building up an export trade.

The Central Valley is the fruit-growing district of Chile, and because of its ideal climate is often referred to by the native population as the California of Chile, since it grows with ease practically all of the fruits produced in California. The climate is most benign, without extremes of heat or cold. Sunshine is abundant, and there is always an ample supply of water. Subtropical and Temperate-Zone fruits all do well, although some districts are somewhat better adapted to the growing of certain kinds of fruits than others.

Climate

Hail is very rare in the Central Valley and does not constitute a crop-growing hazard as on the eastern slope of the Andes. Fogs are frequent in some districts, especially in small valleys close to the sea; but it does not adversely affect the cultivation of fruits as it does in similar valleys on the Pacific coast of North America. Spring rains, which sometimes occur in the southern part of the valley during the blossoming period, cause considerable damage to the fruit set. Autumnal rains also interfere occasionally with harvesting operations. Serious frosts are frequently experienced in the grape-growing districts, especially in the wine-grape centers. These frosts occur during harvest and sometimes inflict considerable damage before the harvest is completed. Early fall frosts in the south also damage late pears occasionally. The injury apparently is not evident at the time of packing but shows up after the fruit is withdrawn from cold storage.

Strong winds also cause considerable damage to both apples and pears in the Bío-Bío region. These high winds usually occur from January to April. In addition to blowing fruit from the trees, they impair the quality of the fruit remaining.

Climatic conditions in the middle and northern parts of the Central Valley are more favorable for the cultivation of stone fruits, subtropical fruits, melons, etc., but less favorable for the Temperate-Zone fruits, such as apples and pears.

Crops

Practically all fruits common to the Mediterranean are grown in the northern part of the valley, as well as such stone fruits as peaches, plums, cherries, and nectarines. While this part of the valley also produces apples and pears, the southern part is better adapted for these fruits. Grapes and melons are also grown to perfection and are without question superior in quality to those of any other South American country.

In general, it may be said that the district embracing Valparaíso, San Felipe, and Los Andes is best adapted for the production of peaches, apricots, pears, grapes, and melons, and the district of Santiago for peaches, plums, late table grapes, and pears. The district around La Serena in the Province of Coquimbo is devoted almost entirely to stone fruits, principally apricots. Curicó is a wine-producing district, but plums are rather intensely cultivated, and to a lesser extent apples, pears, and peaches.

The district around Los Ángeles and Angol in the southern part of the Central Valley is the heart of the apple-growing industry of Chile. Apples make up 90 percent of the fruit produced in this area. The district of Temuco produces apples almost exclusively; but, owing to the abundance of insect pests and diseases that attack them, they are used largely for cider.

Some apples are also produced in the Osorno and Valdivia districts, but like those of Temuco they do not enter fresh-fruit channels. South of Osorno fruit growing is of no commercial importance, the settlers, largely German, having engaged in dairying and general farming.

It can be said, therefore, that the commercial fruit industry of Chile is concentrated pretty much in the small scattered valleys stretching from San Felipe to Temuco.

Grapes are the most important crop in the country, and the grape-growing industry has been developed along highly scientific lines. Grape growing comes natural to

Chileans, descended as many of them are from Spanish and Italian immigrants. More than twice as much land is given over to grapes as to all other fruits combined. Apples are second in importance.

Figure 2.-The Llay-Llay valley in the Province of Santiago. Some of the best melons and grapes in South America are grown in this small valley.

The southern part of the Central Valley is a gently rolling country, resembling eastern Pennsylvania to some extent. It is the principal wheat-producing area. This section formerly produced from 45 to 50 220-pound sacks of wheat per cuadro of 3½ acres - 47 to 52 bushels per acre - but in recent years production has declined to an average of 15 sacks (18 maximum) per cuadro. Around Osorno, a German settlement, scientific methods of farming are practiced. These farmers through fertilization and intelligent soil management are producing from 60 to 70 sacks per cuadro (63 to 73 bushels per acre).

Land upon which orchards are located is for the most part being heavily exploited. There are exceptions, of course, but the general tendency is to farm the land as intensively as possible. Cover crops of various kinds are grown in orchards, but the common practice is to remove the crops and feed them to livestock. The need for a better system of orchard soil management is recognized, but the lack of finances is said to be largely responsible for existing conditions.

Soils

The soils of the Central Valley are largely volcanic in origin. In some valleys rich alluvial deposits have been formed. The physical properties vary considerably with the district. In some places the surface soil is deep, in others quite shallow. Sand and gravel predominate in certain localities, while in others the soil varies from a silty loam to a fairly heavy clay. Around Santiago the soil is largely sandy loam with a permeable subsoil of a gravelly, sandy loam. Soil in the Aconcagua Valley is mostly alluvial. It is rather sandy and has a good permeable subsoil. Soil in the vicinity of Angol is largely volcanic, called in Chile trumao. It is deep, permeable, and fertile and well adapted for apples and pears. Heavier soils also obtain, but the general character is light and loamy. The soils in the Bío-Bío district, while also volcanic, are much sandier and low in fertility. In one orchard visited the soil was very black and had every indication of being poor. Fruit trees, however, grew quite well, especially where fertilized, and the fruit took on an especially high color and finish.

The soils in the Province of Linares vary considerably and are mostly sandy and gravelly and low in fertility. Subsoils are gravelly and, for the most part, well drained. This is also true of the Province of Curicó. Soils here vary from a thin, sandy, gravelly loam to heavier, deep, rich alluvial deposits.

Most soils in Chile are capable of producing fruit of very fine quality. They are generally not strong enough to produce annual crops; but, where fertilizers and cover crops are provided, they produce not only good crops of fruit but fruit possessing fine color and finish. Soils are mostly well drained, being underlaid with a sandy, gravelly subsoil. In the southern part of the valley soils run much heavier and, because of the heavy winter rainfall, are rather poorly drained. This section bears a close resemblance to the Willamette Valley in Oregon, especially to those districts given over to the commercial production of prunes.

Rainfall

From La Serena in the northern part of the Central Valley to Puerto Montt in the south, a distance of approximately 900 miles, is found a wide range of rainfall. From 5 inches of rainfall at La Serena, precipitation increases to an average of 85 inches at Puerto Montt. The gradual increase is shown in figure 1.

Most of the rainfall occurs during the winter months, June, July, and August. During the summer there is almost perpetual sunshine, with little or no rain. It is this summer drought that necessitates irrigation; and winter precipitation, by building up a snow pack in the mountains, forms the reservoir.

In the southern district of Temuco, rains often extend into the spring months, inflicting damage to the fruit set during the blossoming period. They also frequently occur during the harvesting period (March).

Irrigation

The importance of irrigation has already been emphasized. With a few exceptions, all fruit in Chile is grown on irrigated land. In the district of Angol a few apple orchards are found on nonirrigated land, but they are exceptional. Olives and almonds are grown without irrigation and are usually found in those areas bordering irrigated tracts where the land is not too steep.

Chile has an ample supply of water from which to draw its irrigation requirements. Irrigation has been practiced since ancient times. Prior to the Spanish conquest the Indians diverted water from the streams to irrigate their crops. During the colonial period the Spaniards improved the methods of the Indians, and since that time the native Chileans have been extending and improving the system. The Government supervises the distribution and use of irrigation water, but most of the works have been constructed by the landowners themselves. In the Llay-Llay Valley plans are now being discussed to build small dams or reservoirs back in the mountains to insure a more dependable supply of water. These undertakings are on a small and inexpensive scale; nevertheless they are adequate for present requirements. As the country becomes more thickly inhabited and land now considered unfit for cultivation is put under the plow, it may become necessary to create large public irrigation works.

The system in use at the moment consists largely of canals and small ditches that tap the rivers at convenient points and divert the water along the sides of the slopes above the farms. These canals in turn are tapped at convenient points, and the water is distributed by means of smaller canals and ditches.

Many streams whose source is in the Andes or Cordillera cut their way across the width of the country and flow into the Pacific. Only a very small percentage (about 5 percent) of the land in the Central Valley is reached by irrigation ditches; but this is sufficient to take care of the Nation's food requirements and to provide a small surplus.

California has about as much acreage under irrigation as Chile, despite the fact that Chile's agricultural economy, if not its very existence, is dependent upon irrigation. It is estimated that about 2 million additional acres are capable of being irrigated, but it is not probable that any expansion will take place in the immediate future because of the lack of markets for Chile's agricultural products.

The cost of irrigation water varies considerably with the district and the cost of constructing and maintaining the ditches. Water rights are purchased along with the land. In the Llay-Llay Valley, for example, a purchaser would have to pay the equivalent of about $12 an acre for water rights. After the initial payment there are no further costs except annual assessments for maintenance. These assessments are made on a cost basis and amount to about 50 cents an acre a year.

The flow, or capacity, of a canal is divided among the landowners according to acreage irrigated. In the event additional water is required, it is sold on the basis of 1,000 pesos a hectare, or $12 an acre.

FRUIT-PRODUCING REGIONS

It is rather difficult to draw a comparison between the fruit industry of Chile and that of the United States. While there is a certain similarity, the conditions under which fruit is produced in Chile are similar only to those prevailing in the southwestern part of the United States. In terms of volume and cash value the Chilean industry compared with that of the United States appears insignificant. However, in relation to total agriculture and to the national economy of the country as a whole it is quite as important in Chile as the fruit industry in the United States.

Because of topography and climate the arable land in Chile is very limited. According to the Chilean agricultural census about 53 million acres are classified as being suitable for agricultural purposes, but only about 14 million acres are cultivated. The United States, according to the 1940 census, has over a billion acres of land in its farms, with about 358 million acres planted to cultivated crops. In Chile but 7 percent of the total land area is considered suitable for agricultural purposes, whereas in the United States about 60 percent is arable. The farming area of Chile is confined almost entirely to the middle third of the country, the Central Valley. In the United States farming is conducted over pretty much of the entire country.

In Chile less than half a million acres are devoted to horticulture as against 16 million acres in the United States. Tree fruits in Chile occupy about 250,000 acres in Chile and 6 million in the United States. Yet horticultural crops in Chile represent about 3½ percent of all the agricultural crops produced, and in the United States the same crops account for about 4 percent.

Total exports of agricultural products from Chile for the period 1931-35 averaged 85,700,000 pesos ($13,525,000 at the rates of exchange prevailing during those years). Of these exports fresh fruit accounted for some 3,255,000 pesos ($506,000) and total horticultural products, including wine, for 9,161,000 pesos ($1,396,000). Over the same period total agricultural exports from the United States averaged approximately $750,000,000, fresh fruit $42,351,000, and total fruit and fruit preparations $85,436,000. Fresh-fruit exports from Chile therefore represented nearly 4 percent of the exports of total agricultural products as against nearly 6 percent in the United States and exports of total fruits and preparations represented 10 and 11 percent of the agricultural exports of Chile and the United States, respectively.

Soil and climatic conditions in Chile are favorable for the production of a wide variety of crops. Temperate and subtropical fruits are produced in abundance. Domestic requirements are well taken care of, and in addition important supplies are available for export. Besides the natural advantages, such as soil and climate, production costs are relatively low. A lack of capital, however, is a limiting factor and prevents the industry from realizing its full possibilities. Increased production could be quite readily attained through the adoption of a better orchard-management program. While land in Chile is limited, the fruit industry is capable of considerable expansion. Under existing market conditions, however, increased planting do not seem warranted. The accumulation of present exportable surpluses, especially of apples, caused by the war has created a serious marketing problem.

Chilean fruits are of excellent quality and in recent years have created for themselves a place on world markets. Apples are exported principally to Europe. Stone fruits, grapes, and honeydew melons are the fruits that should prove most acceptable to North American markets. These are available from January to June when similar fruits of local origin are off the market.

Province of Santiago

The Province of Santiago in the northern part of the Central Valley lies between the massive Andes and the lesser Cordillera. While it is more or less mountainous and entirely surrounded by high mountains, it contains many small valleys that are fairly level. Fruit growing plays an important part in the agricultural economy of the Province, and several large plantings are located within a short distance of the city of Santiago. While apples are rather extensively planted, the

Chile has an ample supply of water from which to draw its irrigation requirements. Irrigation has been practiced since ancient times. Prior to the Spanish conquest the Indians diverted water from the streams to irrigate their crops. During the colonial period the Spaniards improved the methods of the Indians, and since that time the native Chileans have been extending and improving the system. The Government supervises the distribution and use of irrigation water, but most of the works have been constructed by the landowners themselves. In the Llay-Llay Valley plans are now being discussed to build small dams or reservoirs back in the mountains to insure a more dependable supply of water. These undertakings are on a small and inexpensive scale; nevertheless they are adequate for present requirements. As the country becomes more thickly inhabited and land now considered unfit for cultivation is put under the plow, it may become necessary to create large public irrigation works.

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It is rather difficult to draw a comparison between the fruit industry of Chile and that of the United States. While there is a certain similarity, the conditions under which fruit is produced in Chile are similar only to those prevailing in the southwestern part of the United States. In terms of volume and cash value the Chilean industry compared with that of the United States appears insignificant. However, in relation to total agriculture and to the national economy of the country as a whole it is quite as important in Chile as the fruit industry in the United States.

Because of topography and climate the arable land in Chile is very limited. According to the Chilean agricultural census about 53 million acres are classified as

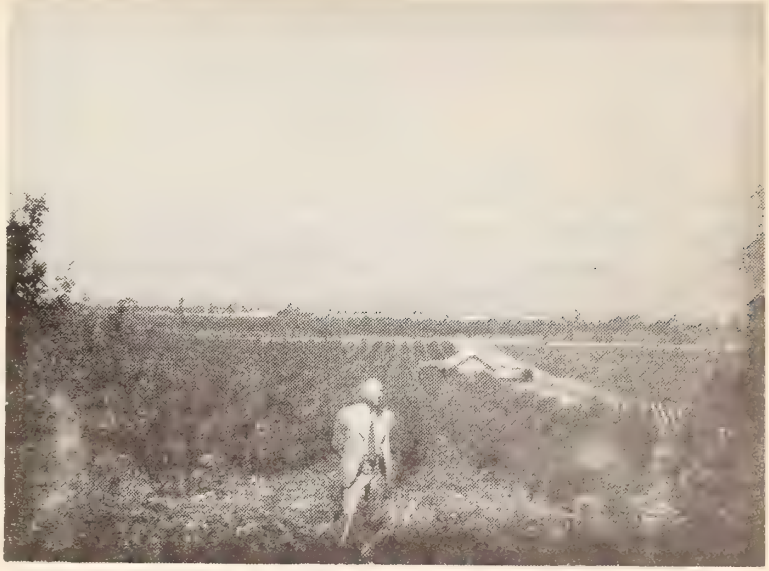

Figure 3.-Panorama of the Llay-Llay Valley. In the foreground is a peach orchard and to the far right a vineyard.

is still retained by the Prieto family. The climate is considered too warm for apples, but stone fruits and citrus do well, and excellent grapes and honeydew melons are produced.

Some of the finest vineyards of table grapes in the whole of South America are found in this small valley. Soil and climate seem to be ideal for these specialized crops. While the lack of color is a fault in the fruit of many fruit-growing districts, in the Llay-Llay just the reverse is true. Perhaps because of the closeness of the surrounding hills, so much light is reflected that too much color is produced in some varieties. Emperor grapes, for instance, frequently take on too dark a color, which is objectionable from a selling point of view.

The valley also produces between 8,000 and 10,000 tons of garlic, which is planted before melons. After the garlic harvest, the land is prepared for honeydew melons. Two cash crops are therefore removed from the same piece of land.

Aconcagua Valley

Over a rather high and steep mountain range from the Llay-Llay is a much larger valley, known as the Aconcagua from the highest peak in the Andean range and the Aconcagua River, which flows throughout the length of the valley. Compared with most valleys in the United States, it is very small, being only 15 to 20 miles long and 5 to 6 miles wide. This valley also has good alluvial soil, which is quite fertile and especially adapted for grapes and stone fruits. Some pears are produced, but most of the pear trees are still young and just coming into bearing.

The stone fruits are principally peaches, plums, and apricots, peaches being the most promising and numerous. Plums have not proved altogether successful. Only a few apples are produced and they are not considered a commercial crop. Most of the peaches are dried and consumed locally. Some are exported to Argentina and a few to Peru and Bolivia. About 2,200,000 pounds are dried annually.

Summer temperatures in the Aconcagua Valley are high, in fact too high for some fruits. The winters are very mild. Day and night temperatures are extreme, owing to the proximity of the Andes. Because of this daily variation in temperature, grapes ripen much later than in the Llay-Llay Valley but at about the same time as do those around Santiago. The Cordillera and Andes exert a great influence on the climate in

Chile; and, although only separated by a few miles, conditions in one valley are often quite different from those obtaining in an adjoining valley.

Other valleys

Next in importance is the Valley of Limache, which is just northeast of Valparaíso and separated from Aconcagua Valley by several small ranges of the Cordillera. The Limache is also a small, narrow valley terminating in a pass. Over the pass is another valley, which in turn fans out into five smaller valleys, all tapering into dead ends at the foot of the mountains.

One valley is known as Dormida, which means "sleeping," and another as Quebrado because it is shaped like a cradle. The latter has been planted to citrus fruits, principally lemons. This valley is very hot, much of the heat of the day being retained through the night. Frosts seldom occur in this district. Subtropical fruits of all kinds do well here. Citrus fruits, as well as stone fruits, are scattered throughout the irrigated parts of the valley, while olives are being rather extensively grown in nonirrigated places.

Province of Curicó

About a hundred miles south of Santiago is the Province of Curicó, primarily a wine-producing district but also producing important quantities of apples, pears, and other fruits. The country is less rugged than most parts of Chile, with large expanses of level or gently rolling land. Agriculture in this district is diversified. While grapes and fruits are important crops, cereal raising and general farming are of major importance.

The soil of Curicó Province is largely volcanic but varies considerably according to locality. In some places it is deep, rich, and fertile, with a permeable, gravelly subsoil. In others it is very light and deficient in organic matter and fertility, with sand and gravel making up a large part of the surface soil. The depth of the water table is an important factor in fruit production. In some parts of Curicó the water table is deep, whereas in others, although moving, it comes quite close to the surface.

The district as a whole is capable of producing some excellent-quality fruit, but cultural practices are faulty.

La Fortuna

One of the most interesting orchards visited in Curicó Province is known as La Fortuna, with a planting of about 190 acres of apples, peaches, and pears. The orchard is situated near the Lontué River. It is believed that a part of this river flows through underground passages, certain streams being diverted to sections underlying the orchard. The abundance of flowing water, together with a good topsoil, produces large trees, capable of bearing good crops of high-quality fruit. The keeping and carrying quality of the fruit, however, is very poor.

The pear orchard of 95 acres containing 7,760 trees is said to be the largest producing orchard in Chile. Many of the trees are under 7 years old and not bearing heavily as yet. Production at the moment is limited to about 20,000 boxes, but a substantial increase is anticipated in the near future. Peaches are also an important crop, 2,500 9-year-old trees producing up to 50,000 boxes (California boxes) in normal years. Because of repeated attacks of mildew, peach trees have suffered considerably and reduced crops have resulted.

The production of apples on this place has not been commensurate with the number of trees, owing to poor pollination. Many growers in Chile in establishing their orchards have failed to recognize the need of suitable pollinizers.

Quechereguas

What is considered to be the best, as well as the most important, orchard in the central apple-producing district is the Quechereguas orchard. This plantation is located just outside the town of Molina, in the Province of Curicó. Slightly over 300 acres are planted to apples and just under 300 acres to prunes. The apple varieties grown in this orchard are shown in table 1.

TABLE 1.–*Number and age of apple trees grown in the Quechereguas orchard, Chile, by varieties, 1936*

VARIETY	NUMBER OF TREES	AGE OF TREES
		Years
Delicious	13,257	15
Yellow Newtown	3,074	7
Rome Beauty	322	15
Richared	400	3
Hoover	176	13
Winesap	112	15
Jonathan	1,294	6
Others	780	Varied

The original planting in the Quechereguas consisted almost entirely of the Delicious variety, and during the early life of the orchard very light crops were produced because of the lack of pollination. At first a row of other varieties was planted encircling the orchard, but this failed to produce the necessary results. The situation is gradually being corrected, but the planting of even more pollinizers is required if the necessary fertilization of blooms is to be accomplished.

The soil of Quechereguas orchard is volcanic, with a large proportion of sand and gravel. It is deep and well drained but not very fertile. This orchard produces some of the best fruit in the whole country and is capable of doing much better. The soil seems especially adapted for Delicious, Yellow Newtown, and Rome Beauty apples. The Delicious harvested from this orchard are the most typical of the variety of any seen by the writer in South America. They are large, well-colored, of high finish, and with the prominent humps on the calyx end so characteristic of the Delicious produced in the Wenatchee and Yakima Valleys of Washington State.

Pruning in this orchard is not in accordance with approved practices. When the trees are making good growth, pruning is confined largely to cutting back terminal growth with no thinning out. Many of the young trees are badly formed, a characteristic of South American fruit trees. Some fertilizer is used; but, as in most orchards in Chile, the trees are underfed. Though cover crops are used, they are invariably removed and fed to the livestock, another practice common in this country.

Province of Linares

Several orchards were visited by the writer south of Molina in the Province of Linares, but they proved disappointing. The soil in this section does not appear to be well suited for the growing of apples, being extremely variable in both chemical and physical properties. In some parts it is very sandy and gravelly, and in others it is of heavy clay underlaid with an impermeable hardpan. The water table is close to the surface in many places, and drainage is poor.

The largest orchard in the Province, containing 7,832 trees, is producing only from 8,000 to 15,000 boxes of fruit a year. The trees, although 10 to 25 years of age, are no larger than 4- or 5-year-old trees in other orchards. They are capable of producing much better crops but have been badly managed. The pruning is heavy and generally incorrect. Although the trees make fairly good growth, terminals are headed back heavily every year. Cover crops grown in the orchard are removed and fed to stock. This orchard has definite biennial-bearing tendencies.

Provinces of Bío-Bío and Malleco

About a hundred miles south of Linares is another interesting apple district located in the Province of Bío-Bío. The Bío-Bío River is the most important stream in Chile. Its headwaters originate in the Cordillera at Victoria. The river flows in a northwesterly direction and empties into the Pacific Ocean at Concepción. Though an important river, it is not navigable on account of numerous sand bars.

The countryside bears a close resemblance to the southern part of Ohio. Rolling hills, planted to cereal crops or sparsely covered with trees, rise on both sides of the river. Vineyards are planted along the slopes rising from the river banks, but the grapes from this district are said to produce an inferior wine. The topography of the country changes abruptly within a few miles. Some Bío-Bío orchards are located on perfectly flat land, whereas others some 15 or 20 miles away are in narrow valleys set between high mountains. In the higher altitudes heavy forest is encountered, almost tropical in growth, whereas in the lower altitudes the growth is stunted and desertlike.

The country is rather backward, roads are poor, and travel is uncomfortable. The soil is volcanic, finely pulverized, and, when dry, very loose and dusty. The roads where not graveled are several inches deep with this fine dust. Even oxcarts stir up quite a "smoke screen" in traveling over them.

The Provinces of Bío-Bío and Malleco (now part of Cautín) are the heart of the Chilean apple industry. Angol, Mulchén, and Los Ángeles are the principal towns. At Angol is located an American missionary school, which has done much to stimulate commercial fruit growing in Chile. The men in charge of this school are all graduates of agricultural colleges in the United States and have had good horticultural training. The school maintains a commercial nursery in addition to a commercial orchard. Trees from the nursery are sold to growers throughout the country, and many of the newer varieties of fruit are introduced and distributed. The school also offers a very good course in fruit growing as a part of its curriculum; and, as there are over 100 acres in orchard on the school property, students are given practical instruction in horticulture.

The Government has erected a very good packing house at Huequén. The growers of the community have formed a cooperative and pack their fruit in the Government-owned packing house.

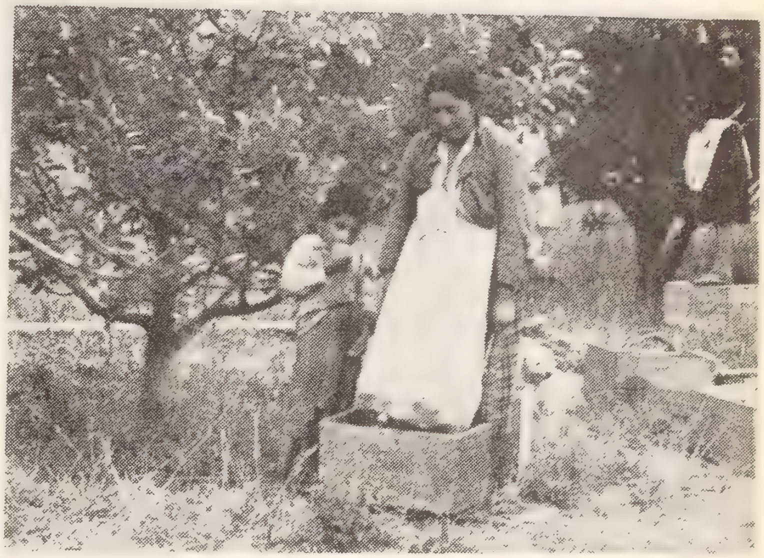

Figure 4.-Apple pickers in an Angol orchard. The entire family takes part in the harvest, each member performing some task.

The Angol-Los Ángeles district is capable of producing some very fine fruit, but the quality and appearance of the apples now leave much to be desired from a commercial, competitive standpoint, especially if the apples are placed on world markets.

Plantings in this district are on a fairly large scale, mostly 100 acres and upwards. The estates, however, upon which these orchards are located are also large, and a good many of the laborers employed live on the farms.

Most of the transportation of fruit is done by oxen. They carry the field boxes from orchard to packing house and the packed fruit from packing house to railway stations. Many children are employed in harvesting, carrying boxes, and cleaning the fruit. In one packing house visited a large number of women and girls were employed to clean the apples. Each worker was supplied with a cloth and each apple was cleaned by hand. Labor is plentiful and cheap, and, under existing conditions, using hand labor is perhaps just as practical as installing brushes or wiping machines.

The country between Angol and Renaico is similar in appearance to certain parts of California, especially the Napa Valley, Valley of the Moon, and sections around Sebastopol and Healdsburg. The hills are brown and bare of vegetation, but the floors of the valleys are planted to grapes and other general farm crops.

The soil in this district, especially around Mulchén, is alluvial and volcanic. Along the Renaico River there are rich deposits of alluvial soil especially well adapted for apple production. The trees in this district grow large and produce good

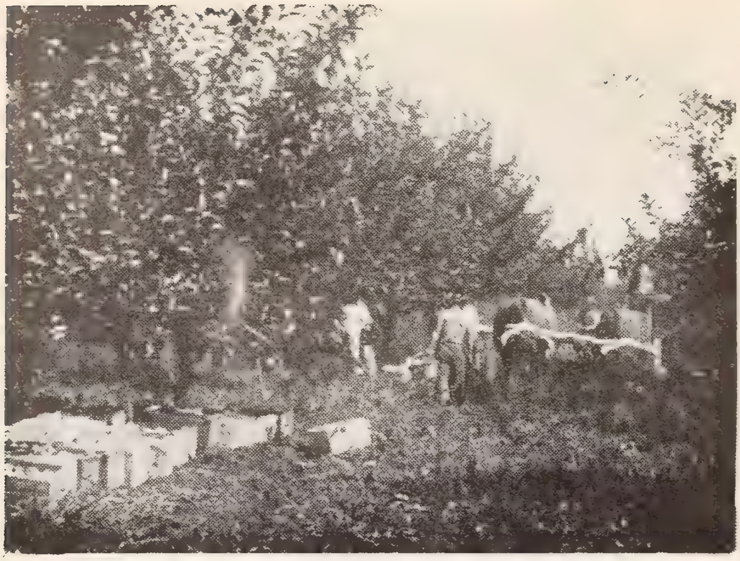

Figure 5.—Apple harvesting near Los Ángeles. Small boys bring the filled boxes to central locations where they are loaded onto wagons drawn by oxen.

crops. In one orchard visited 2,400 trees 25 years of age produce about 25,000 boxes in good years. The soil here is very deep, well-watered, and fertile. So far this orchard has received no commercial fertilizer.

East of Los Ángeles entirely different soil conditions are found. Parts of this section are very flat and covered with a coarse, black, sandy soil, low in organic matter. The largest apple orchard in this district is about 250 acres in size and contains 15,300 trees 23 to 27 years old. While the trees have been well spaced, they have made only fair growth because of the poor soil and the lack of fertilizer and organic matter. The orchard has possibilities, but lack of capital, as in many orchards in the country, prevents improvement.

FRUIT VARIETIES, CHARACTERISTICS, AND PRODUCTION

Chile offers an interesting cross section of the fruit kingdom. In addition to a wide range of species there is found a liberal selection of varieties common to each. In fact, one of Chile's major problems today is not adaptability of species or varieties but rather selection of those varieties that are most popular on an ever-changing world market. Chile's production of certain kinds of fruit, especially apples, has exceeded local demand. The natural result is the search for overseas markets. While most of the varieties are well and favorably known at home, a number of them are unknown and consequently not in demand on European markets.

Unlike Argentina, which is also an exporter of apples, Chile has failed to keep pace with the introduction of new varieties and the change in consumer habits. Several of the leading Chilean commercial varieties are unknown or are no longer popular on world markets. While some old orchards have been top-worked or grafted over to the new or improved strains and some new plantings have been established, the bulk of the tonnage consists of such comparatively unattractive varieties as Huidobro, Hoover, Reinette, and White Winter Pearmain. The Delicious, however, is a popular variety and has been planted heavily. While this variety does well, it frequently fails to color, and little attempt has been made to replace it with the newer red strains.

TABLE 2.–*Varieties of fruit produced in Chile, listed in order of importance, 1936*

APPLES	PEARS	TABLE GRAPES	PLUMS	PEACHES
Huidobro	Bartlett	Torontel	D'Agen	Reina Elena
Hoover	Angoulême	Cuyana	Santa Rosa	Elberta
Delicious	Beurré Quertier	Rosada	Anna Spath	Pomona Mejorado
Yellow Newtown	Winter Nelis	Almeria	Climax	Charavisano
Jonathan	Comice	Emperor	Wickson	Admirable Amarillo
Reinette	Clairgeau	Ribier	Imperial Epineuse	Tardío de Brunel
Rome Beauty	Bosc	Sultanina	President	J. H. Hale
Northern Spy	Hardy	Malaga Wonder	Sugar	Early Crawford
White Winter Pearmain	Anjou	Olivette		Phillips Cling
	Aremberg	Muscatel		Decino Zaragoza
Winesap	P. Barry			Pavía de Tonkinson
Ben Davis	Passe Crassane			Champion
King David	Royal d'Hiver			Turdivi Brunel
	Williams			
	Easter Beurré			

The selection of pears and plums seems to be somewhat better, as far as export markets are concerned. Peaches are grown largely for local use or are sold in a canned or dried form. The selection of grapes, melons, avocados, and citrus fruits is also well advanced and in keeping with present market requirements.

A statistical study of the Chilean fruit industry was undertaken for the first time in 1935-36 and the findings published in 1938. Although the results obtained are the best available, they are said to be incomplete and in many cases inaccurate. Many growers failed to understand the questionnaires that they were asked to fill in, and many failed to classify their fruit according to variety. The figures represent commercial orchards only or those plantings of more than 100 trees or 1¼ acres.

TABLE 3.–*Number of fruit trees or vines and declared production in Chile, 1936*

KIND	NUMBER OF TREES OR VINES			PRODUCTION
	BEARING	NONBEARING	TOTAL	
				Short tons
Apples	461,791	202,716	664,507	28,054
Pears	60,777	51,177	111,954	2,470
Peaches	1,317,042	323,091	1,640,133	17,352
Plums	123,398	94,724	218,122	2,829
Cherries	67,332	29,346	96,678	1,198
Apricots	21,666	13,062	34,728	410
Quinces	17,799	10,197	27,996	404
Table grapes	10,326,294	4,509,970	14,836,264	28,547
Oranges	141,012	127,549	268,561	2,814
Lemons	40,319	20,746	61,065	997
Grapefruit	246	497	743	11
Figs	10,674	1,971	12,645	452
Avocados	33,827	32,037	65,864	672
Olives	39,497	82,920	122,417	604
Chirimoyas	8,001	6,640	14,641	200

Chilean National Agricultural Census, 1935-36.

Apples

Varieties

Huidobro is the most heavily planted variety of apples in the country and is found in most orchards throughout the length and breadth of the apple belt. It seems to do well under a wide range of conditions and is adapted to a great variety of soils. Its chief merit is its versatility and its cropping habits. It is a good bearer and, being a large heavy apple, is capable of producing considerable tonnage. It is a green, unattractive apple, however, and outside of Chile and a few neighboring countries it is virtually unknown. Exports to European markets have not been very successful because of its appearance. In many orchards the Huidobro is being replaced by newer varieties. This replacement is being carried out gradually, however. Young trees of better known sorts, such as Delicious, Jonathan, and King David, are planted between the Huidobros. When they come into bearing the Huidobros will be removed. The Huidobro has good keeping qualities and for the local market will perhaps continue to be a profitable variety.

The Hoover is the next most important apple variety. It is red, rather large, and of good shipping quality. It is also planted extensively over the country and is found on practically all soils. When produced under the most favorable conditions, the Hoover is quite attractive in appearance, possessing high color and a bright, smooth finish. Its chief disadvantage is the pronounced russeting which occurs in the stem end and extends well beyond the lip of the apple. It bears some resemblance

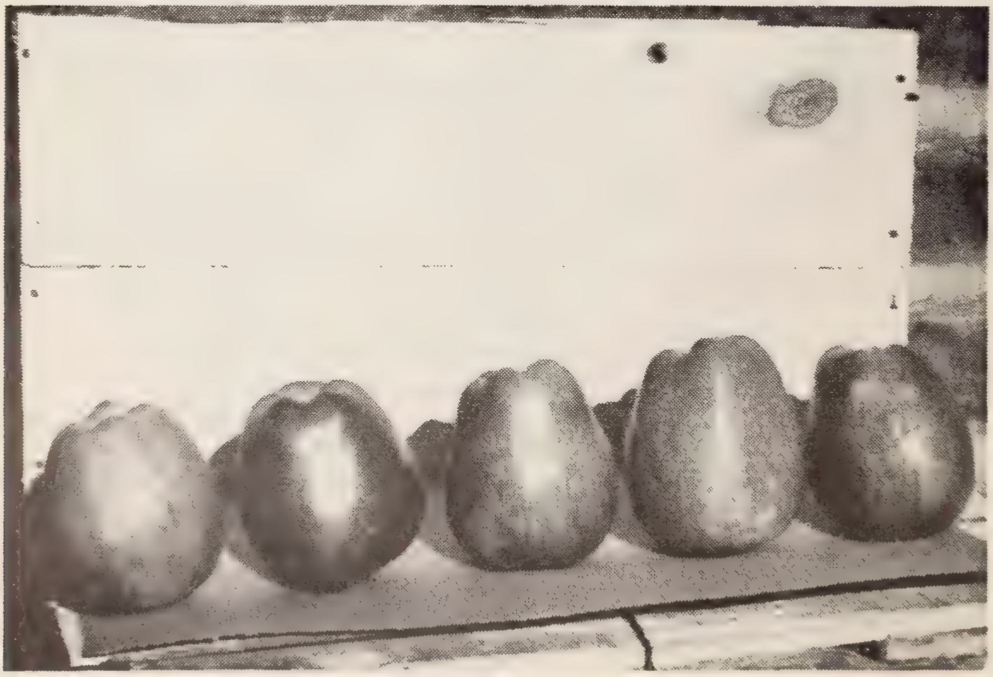

Figure 6.-Red Delicious apples from the Curicó District. The Delicious produced in this part of Chile are the most typical of the variety of any seen by the writer in South America.

to the Lowry, especially when grown under ideal conditions. The tree is a vigorous grower and bears rather heavily. While the apple is well and favorably known on home markets, it is not likely to prove very successful in European markets, especially in England. The German market has been less exacting in recent years, and rather substantial quantities have been shipped there.

Delicious is the most popular variety in the country and is planted in practically every orchard. One orchard visited contained 2,600 trees from 23 to 27 years of age. This variety, while adapted to a wide range of climate and soil, loses some of its varietal characteristics under certain conditions. In the northern part of the Central Valley it has a tendency to ripen prematurely and is usually deficient in color. In the southern part, however, it does much better and sometimes produces a type almost identical with that found in the State of Washington. The tree is a vigorous grower and bears well when properly pollinated.

Though the new red strains of Delicious, such as Richared and Starking, have been introduced, they have not been extensively planted. They are a great improvement over the old Delicious, especially in districts where these do not color well.

The quality of the Jonathan is somewhat disappointing under Chilean conditions. In 1940 in particular the fruit was pale and of poor keeping quality. The trees are not vigorous, especially on sandy soils, and though fairly good croppers they are not producing as much as they could. Many Jonathans are exported, but they lack the finish and high quality that the markets in Europe expect and demand. Given the proper care, this variety is capable of doing well.

The King David variety is practically unknown in Chile, but, as in Argentina, does well under certain conditions, especially on volcanic soils. It colors beautifully, to a deep mahogany red with a fine finish. For the export market it is a promising variety, especially for the Scandinavian countries.

The Yellow Newtown has a very narrow range of adaptability, but in certain districts it seems to grow to perfection. In several places Newtowns were observed that compared favorably with some from the best producing districts in the Pacific Northwest. The variety is not extensively planted, the chief objection to it being its late bearing habits. Capital is not plentiful, and many growers prefer to plant varieties that will give quicker returns.

Both the English Reinette and the Canada Reinette are grown with more or less success and over a fairly large territory. The Reinette is favorably known in Europe and is especially popular on Netherland and German markets, where most of the exports go. They are not included, however, in the newer plantings.

The Rome Beauty does especially well, particularly on the lighter, sandier soils, where it takes on good color and finish. The tree grows well and is quite free from serious insect pests and disease. It has not been very extensively planted; however, there has been a slight increase in plantings during recent years.

The White Winter Pearmain variety has been rather liberally planted but not so much so in recent years. Many of the trees are from 15 to 25 years old. The variety is quite well liked in Chile and has proved profitable.

The Winesap ranks with the White Winter Pearmain in quantity of production, but it is not a variety especially well suited to Chilean conditions. The tree is not a vigorous grower, and on the lighter, sandier soils it is undersized. Furthermore, the fruit fails to color properly, much of it being pale and unattractive from a sales point of view. It is not being recommended for further planting.

Extent of season

Owing to the geographic formation of the country, harvesting dates for the same fruit, or even the same variety, vary considerably. This is especially true of apples and pears, which are produced over a region about 500 miles long, north and south, with great differences existing between the northern and southern extremes. It is estimated that there is about a month's difference in the ripening season between the northern and southern districts. For the central zone around Linares and Curicó, the following dates are about average:

Gravenstein	End of December
Reinette	End of January
Jonathan	do.
King David	Beginning of February
Delicious	Middle of February
Rome Beauty	End of February
Huidobro	Beginning of March
Winesap	Middle of March
Yellow Newtown	do.
Hoover	End of March

Local markets are fairly well supplied throughout the greater part of the year with home-grown offerings of apples. Several of the important varieties produced have a long storage life and can be marketed over an extended period. Huidobro, Winesap, Hoover, Yellow Newtown, and Ben Davis are such varieties. The Delicious, which is second in importance in volume, is also held in storage for several months; in fact, it is kept beyond its natural storage life. Winesap, Yellow Newtown, and Ben Davis can be held in storage until the new season's crop of Gravensteins is ready for harvest.

Production

The statistical study of 1935-36 classified 1,133 orchards as producing apples on a commercial scale. Most of these orchards produce other fruits as well, but it has been found impracticable to list them separately. The 1,133 orchards contain a total of 665,000 trees, 462,000 of which are in full bearing.

Separate statistics are given for the eight most important varieties, but the less important, such as White Winter Pearmain, Stayman Winesap, Gravenstein, Winesap, Reinette Pippin, Ben Davis, and Baldwin, are grouped together. This group also includes the varieties that growers are unable to identify. The largest number of bearing trees, 100,000, or 21 percent of the total, are Huidobros; this variety is followed by the Delicious with 95,000 trees and the Hoover with 66,000. Delicious ranks first in number of nonbearing trees, with Hoover second. The Province of Santiago is the largest producer of apples, with 329 commercial orchards consisting of 99,000 bearing trees. The Province of Bío-Bío, in the southern part of the valley, comes second with 64,000.

Total production of the apple orchards classified amounted in 1936 to approximately 1,275,000 boxes. The heaviest production was of Huidobros, with 366,000 boxes, followed by Hoovers with 200,000, Reinettes with 159,000, and Delicious with 158,000.

There are practically as many nonbearing Yellow Newtown trees as there are bearing, while of the Jonathan variety there are about one and a half times as many nonbearing as bearing trees. At the time the census was taken, about 203,000 trees were listed as of nonbearing age. An increase of about 45 percent in the 1935-36 crop over that of the previous year therefore probably occurred. It is estimated that an additional 15- to 20-percent increase in apple plantings has taken place since the completion of the census. If this estimate is correct, there is now a total apple-tree population of from 700,000 to 800,000 trees.

The Province of Santiago is credited with having the largest number of nonbearing trees, 42,500, followed by Malleco with 35,000 and Valdivia with 32,700. Santiago produces about 21 percent of the total crop. O'Higgins ranks second and Malleco third.

TABLE 4.–*Number and production of apple trees in Chile, by variety and Province, 1935-36*

VARIETY AND PROVINCE	NUMBER OF TREES[1]			PRODUCTION
	BEARING	NONBEARING	TOTAL	
				Boxes[2]
Variety:				
Huidobro	100,199	7,904	108,103	366,005
Delicious	94,791	40,560	135,351	157,930
Hoover	65,501	28,663	94,164	200,500
Yellow Newtown	24,547	20,583	45,130	97,805
Jonathan	11,804	17,628	29,432	27,095
Reinette	37,040	3,664	40,704	159,240
Rome Beauty	9,029	8,865	17,894	14,965
Northern Spy	12,132	1,561	13,693	22,045
Others	106,748	73,288	180,036	229,615
Total	461,791	202,716	664,507	1,275,200
Province:				
Santiago	98,825	42,499	141,324	273,348
O'Higgins	27,748	7,753	35,501	205,610
Malleco	49,462	35,277	84,739	182,060
Valvidia	52,418	32,666	85,084	136,105
Linares	27,213	10,016	37,229	115,205
Talca	37,962	4,995	42,957	99,475
Bío-Bío	64,025	27,757	91,782	62,000
Others	104,138	41,753	145,891	201,397
Total	461,791	202,716	664,507	1,275,200

[1] Estimated plantings since 1936, about 130,000 trees.

[2] Of 1 bushel, or 44 pounds.

Chilean National Agricultural Census, 1935-36.

Exports

Fruit produced in Chile is prepared for both the domestic and the export markets. During recent years an effort has been made to build up overseas markets, with mixed results. In general the varieties and pack have not measured up to the requirements of an open competitive market.

Argentina prior to 1930 provided the chief outlet for Chilean apples, but Argentina itself is now dependent upon export outlets. For a few years fairly substantial shipments were made to England, France, and other continental European countries; but the varieties and quality of the fruit were not popular on those markets, and a shift to others occurred subsequently.

For a few years prior to the war barter deals were arranged with Germany, which accounted for more than 50 percent of Chile's apple exports. Though shipments to Germany showed an appreciable increase, exports to other countries correspondingly declined. In 1934 exports to France amounted to about 190,000 boxes; the following year, however, shipments decreased sharply to 34,000 boxes. During 1936 exports totaled 575,000 boxes, of which Germany took 289,000, or about 50 percent. The war is having a serious effect upon exports, which, though small compared with those from the United States, are nevertheless very important to the industry.

TABLE 5.–*Exports of apples from Chile, by countries of destination, 1939-40*

COUNTRY OF DESTINATION	1939	1940
	Boxes[1]	*Boxes*[1]
Europe:		
Germany	490,694	–
France	33,740	75,177
Sweden	8,362	2,034
Belgium	9,194	–
Finland	5,712	–
Switzerland	5,446	–
Norway	–	316
Great Britain	431	–
Others	28,104	–
Total Europe	581,683	77,527
Americas:		
Peru	44,658	28,910
Bolivia	3,552	5,832
Ecuador	2,375	1,613
Columbia	230	872
Cuba	752	1,899
Panama	987	3,076
Venezuela	1,839	215
Brazil	37,333	67,165
Falkland Islands	75	–
Total Americas	91,801	109,582
Grand total	673,484	187,109

[1] Of 1 bushel, or 44 pounds.

In 1939 European countries accounted for 86 percent of total Chilean exports, with 73 percent going to Germany. In 1940 exports to Europe were severely curtailed, amounting to only 78,000 boxes, 13 percent of the movement of the previous year. Shipments to Brazil were practically doubled, but exports to all South American countries combined increased only 19 percent.

Export prospects in view of forecasted production and in the light of trade dislocations as a result of the war are not very bright for Chilean producers. Total exports in 1940 showed a decrease of approximately 66 percent as compared with those of recent pre-war years.

TABLE 6.–*Estimated production, consumption, processing, and exportable surplus of apples, 1941-46*[1]

YEAR	PRODUCTION	CONSUMPTION	QUANTITY FOR PROCESSING	EXPORTABLE SURPLUS
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
1941	705	400	25	280
1942	910	400	100	410
1943	880	410	200	270
1944	980	440	200	340
1945	1,030	500	200	330
1946	1,200	500	200	500

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[1] Estimates made by the Association of Producers of Apples and Pears in Chile. Bushels of 44 pounds.

Pears

Varieties

Pears are far less important than apples. There are only one-fifth as many trees with one-twentieth of the production. Pears are grown, however, by practically as many growers as are apples.

Winter Nelis does exceptionally well under Chilean conditions. The size of the fruit is good, and in russeting and general appearance it bears a close resemblance to the Nelis produced in the Santa Clara Valley of California. This is perhaps one of the most promising varieties for the country.

Aremberg and P. Barry are probably the most widely planted varieties. They are grown in different parts of the Central Valley and seem to do well under a wide range of conditions. The Aremberg, in particular, is more uniform in both size and shape than is this variety generally.

The Bartlett, which is harvested about the middle of January, is one of the most popular varieties. It bears well and produces fruit of a very good quality. The Bosc, although not very important commercially, does well in most orchards. The fruit is of a good size and is quite typical of the variety. The Comice is recognized as a high-quality pear but is not extensively grown. It is considered too delicate for export.

Extent of season

The following are the average harvesting dates for various pear varieties grown in Chile:

Bartlett	Middle of January
Beurré Quertier	Middle of February
Bonne Louise	do.
Clairgeau	End of February
Bosc	do.
Comice	do.
Winter Nelis	Beginning of March
Royal d'Hiver	Middle of March
Easter Beurré	Beginning of April
P. Barry	do.
Aremberg	Middle of April

Pears are available on the market from early in January until June or July. The season begins with Bartletts, which ripen in the northern part of the Central Valley about the first of the year, and finishes with Easter Beurré, P. Barry, Aremberg, Royal d'Hiver, and Winter Nelis. The Bartlett is the most widely distributed variety in the country at the moment, but the increased planting of late winter varieties, especially the Winter Nelis, is expected to change the marketing picture in the near future.

The total production of pears intended for consumption in the fresh form is only about 109,000 boxes, of which approximately 13,700 boxes, or 12½ percent, are exported. Bartletts, which are consumed during the first 2 or 3 months of the year, at present constitute about 40 percent of the tonnage. This leaves only 48,000 to 50,000 boxes for the later market. Local pears are not available at the time American pears are on offer, but the cost of imported pears is considered too high to warrant any volume of business.

Production

The total number of pear trees in 1936 was listed as 111,954, of which 60,777 were of bearing age. Since the census was taken, it is estimated that there has been an increase of between 5 and 10 percent, making a total tree population of about 120,000. Since the nonbearing trees will soon be producing, total production, which in 1936 was approximately 112,000 bushels, is expected in a few years to reach 200,000 bushels.

The Province of Santiago, with 26,400 trees, has about 43 percent of the total number of bearing trees in the entire country, followed in order by Coquimbo, Talca, Bío-Bío, Valparaíso, and Malleco. The greatest increase in new plantings has taken place in the Provinces of Aconcagua, Valparaíso, O'Higgins, and Valdivia. Of a total of 60,777 bearing trees, 24,209 are of the Bartlett variety, 45 percent of which are located in Santiago Province. Next in importance to the Bartlett is the Beurré Quertier, with 7,632 trees.

During recent years, there has been an increased interest in the Winter Nelis, which is borne out by the figures showing four and one-half times as many nonbearing as bearing trees. The greatest increase in Winter Nelis plantings has been in the Provinces of Aconcagua, Valparaíso, and Santiago. Significant increases are also shown in the Bartlett and Comice varieties.

The total quantity of pears consumed fresh amounted in 1936 to nearly 110,000 bushels, 60 percent of which were produced in the Province of Santiago. The Province of Talca is second in production, with Malleco third. The heaviest production is of the Bartlett variety, with 44,000 bushels representing about 40 percent of the total. Angoulême is second with 16,000 bushels. These two varieties combined made up almost 55 percent of the 1936 production.

TABLE 7.—*Number and production of pear trees in Chile, by variety and Province, 1936*

VARIETY AND PROVINCE	NUMBER OF TREES[1]			PRODUCTION
	BEARING	NONBEARING	TOTAL	
				Boxes[2]
Variety:				
Bartlett	24,209	15,625	39,834	44,420
Beurré Quetier	7,632	5,346	12,978	2,985
Angoulême	6,127	1,393	7,520	16,315
Winter Nelis	1,775	7,259	9,034	2,675
Comice	971	3,886	4,857	1,127
Clairgeau	464	1,257	1,721	540
Bosc	495	964	1,459	335
Hardy	204	803	1,007	325
Anjou	340	1,318	1,658	275
Others	18,560	13,326	31,886	40,665
Total	60,777	51,177	111,954	[3] 109,662
Province:				
Santiago	26,429	27,367	53,796	70,745
Coquimbo	9,172	827	9,999	3,770
Talca	8,774	1,071	9,845	9,305
Bío-Bío	3,717	1,051	4,768	3,945
Valparaíso	3,637	5,041	8,678	3,190
Malleco	2,350	2,233	4,583	7,265
Others	6,698	13,587	20,285	14,075
Total	60,777	51,177	111,954	[4] 112,295

[1] Estimated plantings since 1935-36, 5,000 to 10,000 trees.

[2] Of 1 bushel, or 44 pounds.

[3] Consumed fresh. Dried pears are not listed by varieties.

[4] Consumed fresh and dried.

Chilean National Agricultural Census, 1935-36.

Exports

Pear exports tend to fluctuate from year to year. In 1936, 13,700 boxes were shipped, representing about 12½ percent of the crop. This quantity was less than that shipped in the 2 or 3 preceding years. Peru takes about 40 percent of the exports. Smaller quantities go to Europe, principally Germany and the Netherlands. Cuba, Spain, and the United States have also taken small quantities.

Plums

Varieties

Most varieties of plums do well in Chile, especially in the southern part of the Central Valley. They do not, however, seem to be doing well in the district around San Felipe, though it is well suited to peaches. The trees there are vigorous growers, but production is light. The Province of Curicó is an important plum-raising area, but production is irregular. Many trees have been planted on unsuitable soils, and as a result the mortality has been high.

D'Agen is the most important variety grown in the Province of Curicó. Large crops are produced in good years, but in the off years only about 50 percent of a crop is harvested. Santa Rosa, Wickson, President, and a few Climax are grown for export, all of which do well when planted in the right locality. Imperial Epineuse is not considered a good commercial variety, and future plantings are discouraged.

Extent of season

The following average harvesting dates are given for the principal varieties of plums produced in Chile:

Santa Rosa	Middle of December
Climax	do.
Wickson	Beginning of January
Imperial Epineuse	First of February
President	First to middle of February
D'Agen	Middle of February
Anna Spath	Early March

Plums are available on the local markets from about the middle of December until the end of March. While a few early plums are produced, the season does not really get under way until the Santa Rosa comes onto the market. The D'Agen, which comprises about 50 percent of the total plum crop, appears in February. The season ends with the Anna Spath. Exports are not important, attempts to develop a trade having proved disappointing.

Production

According to the 1935-36 census, Chile had 123,398 bearing and 94,724 nonbearing plum trees. In addition, an increase of between 20 and 30 percent in plantings is reported since the census was taken. Santiago has 64,000 bearing trees and 41,000 nonbearing. O'Higgins is second with 16,900 bearing trees and about the same number of nonbearing. Important increases in plantings are shown in the Provinces farther to the south in the Central Valley, especially in Curicó. The D'Agen is the most widely grown variety, with Santa Rosa second. Anna Spath, though not so important as yet, is becoming increasingly popular. Such varieties as Climax, Burbank, and Wickson are produced on a much smaller scale.

Of the 1936 total production of plums about 2,211 short tons were consumed fresh and 618 short tons were canned.

TABLE 8.–*Number and production of plum trees in Chile, by variety and Province, 1936*

VARIETY AND PROVINCE	NUMBER OF TREES[1]			PRODUCTION[2]
	BEARING	NONBEARING	TOTAL	
				Short tons
Variety:				
D'Agen	65,469	54,185	119,654	677
Santa Rosa	16,624	8,774	25,398	589
Anna Spath	7,717	11,669	19,386	61
Climax	2,994	1,339	4,333	51
Wickson	2,428	1,349	3,777	39
Others	28,166	17,408	45,574	794
Total	123,398	94,724	218,122	2,211
Province:				
Santiago	64,105	41,184	105,289	258
O'Higgins	16,860	16,691	33,551	209
Talca	15,991	10,510	26,501	398
Curicó	4,621	13,421	18,042	309
Others	21,821	12,918	34,739	1,655
Total	123,398	94,724	218,122	2,829

[1] Estimated plantings since 1935-36, about 30,000 trees.
[2] Consumed fresh, by variety; total production, by Province. Includes 618 tons processed.

Chilean National Agricultural Census, 1935-36.

Exports

The export trade in plums has not been very satisfactory. Maximum shipments occurred in 1933 when about 156 tons were shipped fresh. Since then exports have fallen off appreciably. Attention is instead being paid to dried prunes, exports of which in 1936 totaled about 850 tons, mostly to Germany, with some to Peru. Great Britain and Argentina, the principal importers during 1932, 1933, and 1934, have taken nothing in recent years. The small outlets in the Netherlands and Belgium also no longer exist.

Peaches

Varieties

The Elberta is the most widely produced variety of peaches in Chile, with 100,000 bearing trees. It is followed by the Reina Elena and the Pomona Mejorado.

About 80 percent of the trees listed in the census were not classified by the growers. In Coquimbo alone, 698,201 bearing trees of a total of 769,482 were listed as of unknown variety, and of a total of 149,367 nonbearing trees, growers failed to classify 133,968.

Extent of season

The average harvesting dates for the varieties of peaches produced in Chile are as follows:

Elberta	Middle of January
Tonkinson	End of January
Reina Elena	Beginning of February
J. H. Hale	do.
Phillips Cling	End of February
Pomona Mejorado	Middle of March

The production of peaches is an important part of Chile's fruit industry, amounting to over 17,000 tons annually. Considerable quantities are dried, but a large part of the crop is consumed fresh. The Charavisano, which ripens early in January, is the first peach on the market. It is followed closely by Elberta, the principal variety.

Production

The greatest number of peach trees are in the Province of Coquimbo in the northern part of the Central Valley. Many of the varieties are unknown, or at least have not been identified or properly classified by the grower. Of the 1,317,042 bearing trees in the country, 769,482, or 58 percent, are in Coquimbo. Santiago is second in importance, accounting for 26 percent, with Aconcagua a poor third. The 323,091 nonbearing trees reported in the census are now in production and account for an increase of about 25-percent in the total crop.

The Province of Santiago produces about 60 percent of the peaches that are consumed fresh. In the Provinces of Coquimbo and Aconcagua a large part of the crop is dried. In Chile most of the peaches are dried with the stone. Only 1,716 pounds of peaches were dried without the stone in 1936 as against 2,262,000 pounds dried with the stone. About 90 percent of those stoned are produced in the Province of Coquimbo.

Table 9.–*Number and production of peach trees in Chile, by variety and Province, 1936*

VARIETY AND PROVINCE	NUMBER OF TREES			PRODUCTION
	BEARING	NONBEARING	TOTAL	
				Short tons
Variety:				
Elberta	81,885	19,863	101,748	2,410
Reina Elena	67,617	19,828	87,445	2,453
Pomona Mejorado	32,701	13,704	46,405	1,134
Charavisano	28,793	5,827	34,620	699
Admirable Amarillo	18,396	15,143	33,539	526
Tardío de Brunel	9,978	2,491	12,469	260
J. H. Hale	912	3,895	4,807	74
Early Crawford	1,758	596	2,354	28
Others	1,075,002	241,744	1,316,746	7,541
Total	1,317,042	323,091	1,640,133	15,125
Province:				
Coquimbo	769,482	149,367	918,849	3,816
Santiago	342,414	108,080	450,494	9,514
Aconcagua	85,464	20,380	105,844	1,353
Valparaíso	69,402	30,646	100,048	1,060
O'Higgins	23,282	6,425	29,707	683
Talca	15,434	763	16,197	562
Ñuble	4,129	3,232	7,361	160
Malleco	1,513	899	2,412	66
Linares	1,134	1,145	2,279	23
Bío-Bío	1,035	170	1,205	19
Others	3,753	1,984	5,737	133
Total	1,317,042	323,091	1,640,133	[2] 17,389

[1] Consumed fresh.

[2] Includes 2,264 tons of dried peaches.

Chilean National Agricultural Census, 1935-36.

Exports

The exportation of peaches is still on an experimental basis. Shipments vary from year to year, indicating no particular trend. Exports of fresh peaches are made to the United States and Brazil. The export movement of the dried product is principally to South American countries, Argentina, Peru, and Uruguay in particular. Germany has shown some interest in dried peaches in recent years.

Apricots and Nectarines

Apricots and nectarines are available from early December until February. The apricot season lasts about 6 weeks, usually ending in January. Nectarines ripen about a month later and are found on the markets from early January until the middle of February. Some attempts have been made to export nectarines to Europe. The fruit possesses an excellent flavor and is highly aromatic. The tendency, however, has been to harvest the fruit while it is still immature, so that it arrives on foreign markets in a more or less shriveled condition.

Only 34,728 apricot trees were recorded in the 1936 census, 21,666 of which were in bearing. The industry is concentrated largely in the Province of Atacama in the northern part of the Central Valley. In fact, apricot plantings are confined to Santiago and the Provinces to the north. The Royal, Tilton, Moorpark, Blenheim, and Paviot varieties are raised.

Production of apricots in 1936 amounted to 410 tons, 70 percent of which originated in the Provinces of Aconcagua, Valparaíso, and Santiago.

Apricots have not entered export channels to any extent, and the few nectarine shipments made have been largely experimental in nature.

Grapes

In quality Chilean grapes, both wine and table, rank among the world's best. The high development of the grape industry in Chile results from (1) the ideal climate and (2) the wine-using habits of Latin Americans. The best table grapes are produced in the northern part of the Central Valley in the country around Santiago and Valparaíso, and the best wine grapes are grown farther south in the district of Curicó.

Chilean wines are recognized everywhere for their excellence and rank with the better known French and German wines. Though high-quality wine is produced largely for export purposes, large quantities of the cheaper grades are consumed locally. The heavy consumption of chicha, a popular fermented drink, is often called the curse of the country. The production of wine and chicha ranges from 60 million to 85 million gallons a year, depending upon the season.

About 60 percent of the wine grapes are produced without irrigation, but most of the table grapes are grown under irrigation. Practically all the commercially known varieties of grapes are produced and many whose identity is unknown to the grower. It is necessary for one to see the size of the berries and the bunches to appreciate the excellence of this crop. Yields are heavy, and even after two or three cuttings it is difficult to realize that the crop has been touched. Bunches of grapes 12 inches or more in length and weighing several pounds are not uncommon.

Varieties

The following varieties of grapes used exclusively for the table are produced: Torontel, Cuyana, Rosada, Almeria, Emperor, and Ribier (Alphonse Lavalle). The Torontel is the most important variety, comprising about one-third of the total. The Cuyana, a heavy bearer, ranks second in production. Rosada is third, followed by Emperor, Almeria, and Ribier.

The Emperor, Almeria, Ribier, and Sultanina are the most important export varieties. The vine is a heavy bearer and produces large, uniform-sized bunches. In certain districts, particularly in the Llay-Llay Valley, the difficulty is not in getting sufficient color but in preventing too much color. The proximity of surrounding mountains is thought to be responsible for the tendency to overcolor. The berries are large and well formed and of very high sugar content. This variety lends itself especially to Chilean conditions.

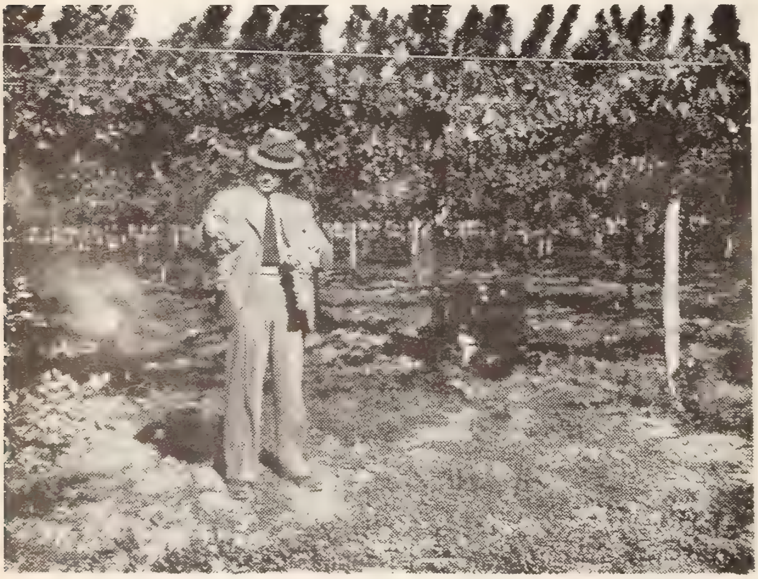

Figure 7.-A vineyard in the Llay-Llay Valley. The parral system of planting and training is well illustrated in this fine vineyard of Almerias.

The Almeria is an excellent producer and one of the most important table grapes. It does very well in most districts, but in some vineyards the berries are subject to a brownish stain, which is believed to be the result of too much sun. The berries and the bunches are, on the whole, larger than those produced in California.

Ribier variety also seems to grow to perfection under Chilean conditions. It is a very heavy producer. Bunches and individual berries are very large and of exceptionally fine quality. In one vineyard visited 5,380 vines, 5 to 10 years old in 1939, produced 178,262 pounds of fruit, or an average of 33 pounds per vine.

The Sultanina is a promising variety for Chile. While not heavily planted as yet, it is increasing in popularity. Soil and climate are favorable, and an increased production seems quite probable.

Extent of season

The following are the average harvesting dates for grapes in Chile:

Malaga Wonder	End of January
Valencia	do.
Olivette	Middle of February
Ribier	do.
Emperor	End of February
Cuyana	do.
Sultanina	Beginning of March
Lattuario	Middle of March
Almeria	End of March

Table grapes of excellent quality are both plentiful and cheap from February through April. The season opens with Malagas and ends with Almerias. During the middle of the season, markets are well supplied with the Torontel, Cuyana, and Rosada varieties, supplemented with Ribier and Emperor. Torontel, Cuyana, and Rosada are consumed primarily on the home markets, while Ribier, Emperor, Lattuario, and Almeria are packed principally for export.

Production

The 1935-36 census shows for the entire country a total of 242,308,000 vines, 227,472,000 of which are of wine grapes and 14,836,000 of table varieties. About twice as much land is planted to vines as to all other fruit crops combined. Of the 14,836,000 vines of table grapes shown by the census, 4,510,000, or 30 percent, were at that time of nonbearing age.

The production per acre varies considerably according to district; but in a well-managed parral, particularly of Emperors or Almerias, yields average 1,800 20-pound packed boxes a hectare, or a little over 700 boxes an acre.

On two parrals visited in the Llay-Llay Valley the interesting data on production given in table 10 were obtained.

Cost-of-production figures are unobtainable, but a selling price of 10 to 12 pesos (30 to 36 cents) per 20-pound box, Valparaíso, insures the grower a profit. This represents, roughly, about 1½ cents a pound. Wages average 7 pesos (21 cents) a day. Trimmers receive 5 to 7 pesos; packers, 9 to 10 pesos; ordinary laborers, 6 pesos. The freight from Santiago to Valparsíso is 45 centavos (1-1/3 cents) per 20-pound box.

The Province of Santiago recorded the largest number of vines, about 33 percent of the total, with Coquimbo second and Valparaíso third. The production of table grapes reached a total of over 28,547 short tons in 1936, the bulk of the crop coming from the Provinces of Santiago, Coquimbo, Aconcagua, and Valparaíso. The Torontel variety made up about one-third of the total, or 8,832 tons; Cuyana, 2,812 tons; Rosada, 1,507 tons; Emperor, 1,035 tons; and Almeria, 450 tons.

Raisin production amounted to 1,375 tons, concentrated entirely in the Province of Coquimbo.

Exports

Returns from overseas markets have been sufficiently remunerative to encourage production for export. Seventy percent of the shipments made in recent years have gone to United States markets, 20 percent to Scandinavia, and 10 percent to the United Kingdom.

TABLE 10.–*Number, age, and production of grapevines on two parrals in the Llay-Llay Valley, by variety, 1936*

VARIETY	NUMBER OF VINES	AGE	PRODUCTION[1] 1937	PRODUCTION[1] 1938	PRODUCTION[1] 1939
		Years	*Pounds*	*Pounds*	*Pounds*
Parral No. 1:					
Emperor	9,780	5 to 10	903,767	597,940	498,297
Almeria	4,366	do.	185,995	259,442	153,233
Ribier	440	do.	26,665	31,784	51,854
Olivette	720	do.	47,183	43,056	33,636
Sultanina	600	do.	6,415	7,299	24,259
Malaga Wonder	65	do.	5,935	6,338	10,342
Total	–	–	1,175,960	945,859	771,621
Parral No. 2:					
Emperor	2,766 16,800	2 to 4 5 to 11	1,150,717	846,159	848,057
Almeria	2,253 12,550	2 to 4 5 to 11	391,749	549,045	369,782
Ribier	676 4,940	2 to 4 5 to 11	90,935	112,150	126,780
Valencia	1,156	5 to 11	76,134	70,984	49,008
Olivette	444	5 to 11	47,183	45,944	36,019
Malaga Wonder	5,515 8,542	2 to 4 over 15	–	70,547	49,383
Cuyana	1,914 58,710	2 to 4 over 15	–	932,546	654,325
Sultanina	513	2 to 4	–	–	1,010
Italia	6,834	over 15	–	51,808	36,266
Christalina	3,825	over 15	–	26,455	18,519
Total	–	–	–	2,705,638	2,189,149

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[1] Net.

The fresh-grape and raisin export trade have both increased during recent years. Exports of table grapes increased considerably during 1932, 1933, and 1934, reaching 940 tons in 1934. In 1935 exports dropped to 230 tons but in 1936 increased to about the previous level. The principal outlet for table grapes is the United States, with Ecuador and Panama next in importance. Raisin exports in 1936 rose to 578 tons, going principally to Peru, Ecuador, and Bolivia. Trade with these countries is increasing.

Trade with European countries as a result of the war has been reduced to insignificant levels. Shipments to the United Kingdom have been cut off entirely and exports to the Scandanavian countries have been reduced by more than half. The production of table grapes is a relatively minor part of the Chilean grape industry, since the bulk of the crop is used in the manufacture of wine. Though exports of table grapes represent but about 5 percent of the total grape production, they are important to the industry. Shipments to the United States have been rising in recent years, and the increase in 1940 was nearly enough to offset the reduction in exports to European countries. During the 1940 shipping season the United States was the principal market for Chilean grapes, accounting for nearly two-thirds of the total.

Exports to countries bordering the Pacific Ocean are of importance, but shipments to countries along the Atlantic are small, largely because of Argentine competition and the lack of adequate transportation facilities to these countries.

Table 11.—*Number and production of table-grape vines in Chile, by variety and Province, 1936*

VARIETY AND PROVINCE	NUMBER OF VINES			PRODUCTION
	BEARING	NONBEARING	TOTAL	
				Short tons
Variety:				
Torontel	3,049,263	3,067,305	6,116,568	8,832
Cuyana	484,955	132,532	617,487	2,812
Rosada	430,667	177,195	607,862	1,507
Almeria	223,582	11,914	235,496	450
Emperor	88,629	12,952	101,581	1,035
Ribier	79,508	63,991	143,499	357
Others	5,969,690	1,044,081	7,013,771	12,177
Total	10,326,294	4,509,970	14,836,264	28,547
Province:				
Santiago	4,449,863	3,417,693	7,867,556	16,185
Coquimbo	3,400,381	265,572	3,665,953	5,437
Valparaíso	979,918	309,639	1,289,557	2,011
Aconcagua	766,473	270,186	1,036,659	2,479
Ñuble	216,530	18,470	235,000	172
Talca	153,300	37,350	190,650	213
Malleco	94,307	9,742	104,049	150
Concepción	86,008	65,400	151,408	666
O'Higgins	60,170	34,676	94,846	413
Others	119,344	81,242	200,586	821
Total	10,326,294	4,509,970	14,836,264	28,547

[1] Includes 1,377 tons of dried.

TABLE 12.-*Exports of grapes from Chile, by countries, 1939-40*

COUNTRY OF DESTINATION	1939	1940
	Boxes[1]	*Boxes*[1]
United States	52,200	67,700
Ecuador	12,800	15,900
Panama	4,400	7,400
Venezuela	2,800	200
Brazil	2,700	-
Columbia	2,700	4,600
Peru	1,000	1,700
Cuba	600	1,200
Guatemala	200	800
Others	300	100
Total Western Hemisphere	79,700	99,600
United Kingdom	15,500	-
Sweden	11,700	4,500
Norway	-	900
Total Europe	27,200	5,400
Total all countries	106,900	105,000

[1] Of 22 pounds.

Chile is not a large nation with high purchasing power; and though grape growers sell a substantial part of their product locally, they hope to expand the American outlet during the off season in the United States. The inherent quality of the product is good; and, with additional experience and care in the handling and transportation of the fruit, there is no reason why they should not develop a successful export trade to both European and American markets.

Melons

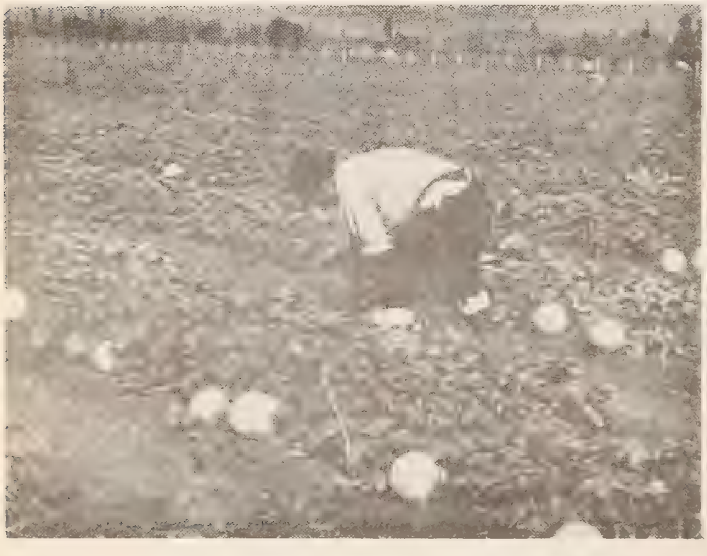

Figure 8.-Picking honeydew melons in the Llay-Llay Valley. About one-tenth of the Chilean melon crop is produced in this valley as a second crop after garlic.

Of the various horticultural crops produced in Chile, grapes and melons are the two with outstanding quality. The area in melons is limited to 500 acres, about half of which is located in small valleys in the Provinces of Santiago and Valparaiso.

According to the 1936 census, production totaled 1,566 tons, but during recent years exports have been increasingly successful and further plantings have been stimulated.

One of the most important melon sections is the Llay-Llay Valley midway between Santiago and Valparaiso.

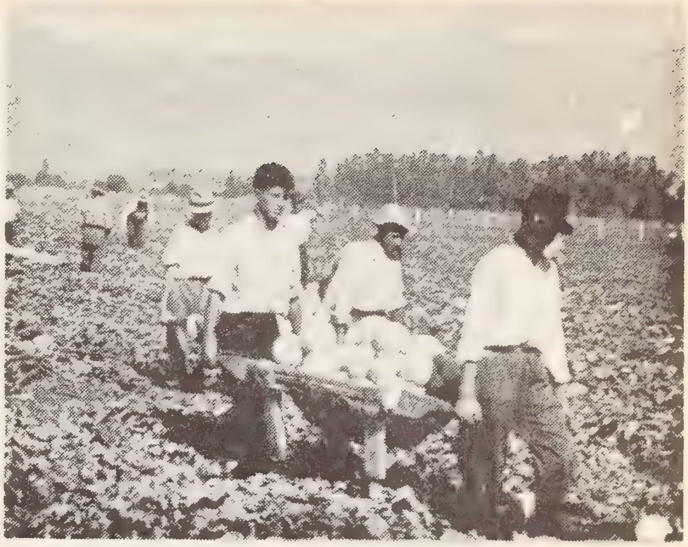

Figure 9.-Workers in a field of honeydew melons in the Llay-Llay Valley. These melons are grown from imported seed and are excellent in quality.

During the 1940 season, 250 acres of the 12,400 under cultivation were planted to melons, 105 acres of which were devoted to honeydews. Ten percent of the Chilean melon crop is produced in this small valley. Soil and climate are ideally suited, as evidenced by the quality of the fruit produced. The soil is alluvial, rich and deep, black in color, but porous and well drained.

Two crops are usually produced a year in the Llay-Llay Valley - garlic followed by melons. Between 8,000 and 10,000 tons of garlic are shipped from the valley. After the garlic crop is harvested, the land is cultivated and prepared for melons. Melon seed is imported from Rocky Ford, Colo., each season in order to keep the seeds pure and to prevent crossing and degeneration.

The cost of producing melons averages approximately 2,000 pesos a hectare, or $24 an acre. Laborers receive from 6 to 10 pesos (18 to 30 cents) a day, depending upon the type of work performed. Those who live on the farms receive food and housing and are allowed to keep two animals free. The average yield per hectare is 1,000 crates (400 crates, 5,700 melons, per acre), with about 50 percent of the fruit of export quality.

The melons are packed in crates containing from 5 to 12 melons each. The most popular-sized melon runs 8 to the crate and sells for about 1.8 cents. Melons that are not suitable for export are sold locally for about 15 centavos (0.45 cent).

The selling price of a crate of melons is usually about 40 cents, f.a.s. Valparaíso. The freight to London is 60 cents, the duty 10 percent, and the handling charges 1 shilling (20 cents at the official rate of exchange) plus 5 percent. The total cost, landed, is from $1.50 to $1.60 per crate. The wholesale value, United Kingdom ports, is from 12 to 15 shillings ($2.88 - $3.60 at 1939 rate of exchange) per crate.

Chilean honeydew melons are available on American markets from January through May, with a few scattered shipments on offer during June and July. Wholesale values fluctuate widely. Melons in good condition realize from $2 to $4, depending on size, condition, and the usual market fluctuations.

The melons are shipped under ordinary stowage and frequently arrive in poor condition and require repacking. There is also a tendency on the part of the shippers to pick the melons somewhat immature. Early-season arrivals frequently fail to ripen out properly, with the result that consumers are dissatisfied. Chile is capable of producing an excellent mellon for the export market, but certain improvements in harvesting, handling, and transportation are badly needed.

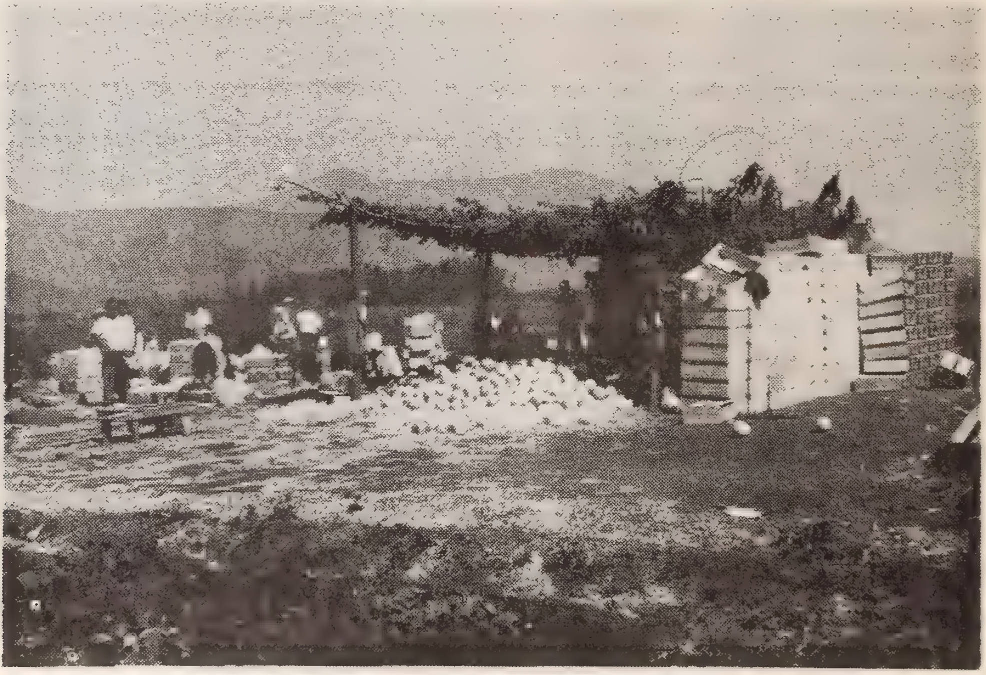

Figure 10.-Packing honeydew melons in the field. Melons do not receive the care in handling and packing their excellence deserves.

On shipments to New York the freight in 1940 was $11 per 40 cubic feet, equivalent to 41½ cents per standard crate and 52½ cents per jumbo crate. The duty is 35 percent ad valorem. Charges, including custom-house entry and bond, discharging, cartage and stacking, cables, etc., amount to about 8 cents per crate. Repacking and reconditioning, which are frequently required, range from 4 to 8 cents per crate. On the basis of an average selling price of $2.50 per crate and on the assumption that the 35-percent ad valorem duty is paid on that valuation, the total costs, landed New York, including duty (but exclusive of those of production) average about $1.45. To this must be added commission, generally about 6 percent. These charges are itemized below:

	Dollars
Freight	0.415
Duty[2]	.875
Cartage	.05
Bond	.01
Cables, etc.	.02
Labor	.05
Commission[3]	.15
Total	1.57

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[2] Based on a value of $2.50 a crate.

[3] 6-percent commission on a selling price of $2.50.

Chilean melons receive very rough treatment in the field and in packing. It is believed that much of the loss that occurs on the receiving market could be eliminated by more careful handling.

Exports of Chilean melons to the United States during the past 6 years (1936-41) averaged 129,000 crates a year.

TABLE 13.—*Exports of mellons*[1] *from Chile, by countries, 1935-40*

COUNTRY OF DESTINATION	1935	1936	1937	1938	1939	1940 (prelim.)
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
United States	5,012	4,768	5,124	3,377	4,192	4,147
United Kingdom	0	2	1	136	463	0
Other European countries	3	(2)	3	2	2	4
Panama	8	37	33	64	63	51
Cuba	10	5	2	0	12	8
Peru	18	26	29	25	17	34
Brazil	193	0	0	11	0	0
Other South American countries	1	10	15	19	15	14
Other countries	0	2	[3] 7	0	[3] 35	0
Total	5,245	4,850	5,214	3,634	4,799	4,258

[1] Melons were not classified as to kind prior to 1938. Exports of honeydew melons totaled 3,370,000 pounds in 1938 and 4,650,000 pounds in 1939.

[2] Less than 500 pounds.

[3] Exported to Canada.

Compiled from Comercio Exterior, Dirección General de Estadística de Chile, 1935-39, and Estadística Chilena, Dirección General de Estadística, December 1940.

Citrus Fruits

While citrus fruits have been produced in Chile for a great many years, from a commercial point of view the industry is comparatively new.

Oranges are available on local markets from about May to September. Navel oranges predominate, with the Thompson variety the most important commercially. Washington Navel is second in importance. Valencias are produced on a much smaller scale, but production is increasing. More than half of the Valencia trees are not yet of bearing age, which means an increased production of almost 100 percent in the near future. This trend will extend the marketing season over a longer period.

The total number of orange trees in 1936 was 269,000, 141,000 of which were in production. Since the 1936 census it is estimated there has been about a 20-percent increase in plantings, making the present population some 320,000 trees. The Thompson is the most widely planted variety, accounting for about 40 percent of the total, distributed mainly in the Provinces of Santiago and O'Higgins. The Washington Navel is second with 46,000 bearing trees and 54,000 nonbearing, most of which are planted in the Provinces of Aconcagua, Valparaíso, Santiago, and O'Higgins. There were reported 21,528 trees of Valencia Late oranges in 1936, 13,000 of which were still of nonbearing age.

In 1936 the total orange crop amounted to approximately 85,000 boxes, but production in a short time is expected to show an increase of some 90 percent.

The total number of lemon trees in Chile is given as 61,000, 40,000 of which are in bearing. Production in 1936 amounted to about 26,300 boxes of 76 pounds.

During the past 5 years there has been an estimated increase of 20 percent. Over 60 percent of the trees are in the Province of Santiago.

Grapefruit is of no commercial importance, only 743 trees being reported for the whole country.

Miscellaneous Tree Fruits

Interest in olive production is increasing, as is indicated by the large number of nonbearing trees, 83,000 of a total of 122,000 trees. In 1936 the olive crop amounted to 604 short tons, 417 short tons of which were sold fresh and 187 tons sold for oil.

Production of avocados is also increasing. Of a total of 66,000 trees, 32,000 are of nonbearing age. Production in 1936 amounted to 672 tons, but it is increasing rapidly and in a short time will be at least double that quantity.

Avocados and other tropical and subtropical fruits are produced for home use, production not having yet reached export proportions.

CULTURAL PRACTICES

Planting and Spacing

The planting systems employed in Chile are the same as those used in other countries. While some orchards are laid out on the diagonal plan, the majority have been planted on the square. The use of fillers is common; and, though in some orchards the old trees are removed when they begin to crowd, the tendency is to allow them to remain beyond the approved removal period. In general, orchards are well laid out, insofar as alignment is concerned.

Where orchards have been planted on hillsides, the topography of the country has been taken into consideration and the rows have been planted along contours in order to permit irrigation. Unlike those of certain European countries, however, very few orchards are established on steep hillsides. In irrigated districts, only that part of the land which can be easily irrigated is cultivated. Where irrigation is not required, some orchards are planted on the slopes, but in only a few places in the southern part of the Central Valley.

Though the trees in many orchards in Chile are planted much too close together, the problem is not nearly as serious as in the irrigated districts of Argentina. On the whole, the industry is on a better foundation because of more liberal spacing. Furthermore, much of the soil upon which orchards are established is loose, sandy or gravelly, and rather low in organic matter and fertility; consequently such large vigorous trees are not produced in Chile as in Argentina.

Proper spacing distances are recommended by Chilean officials and horticulturists, but these recommendations are frequently not followed. Tillable land being scarce, there is a tendency to make as full use as possible of that available. The recommended spacing for apples is 28 to 33 feet, but most plantings are laid out 23 by 23 feet. The proper spacing for pears is considered to be 23 to 26 feet, but most growers plant them 16 to 20 feet apart. Peaches and plums are spaced 13 to 16 feet apart, while the recommended distance is 23 feet.

Pear trees set 26 feet apart are frequently interplanted with peach trees, which the growers say will eventually come out. A few apple orchards were observed by the writer in which tree rows had been spaced about 33 feet apart and the trees about 16 feet apart in the row. This system is some improvement over the 23-by-23-square system, as it facilitates cultivating and harvesting.

As a rule Latin Americans are more efficient in the cultivation of the vine than they are of tree fruits. By natural heritage they seem to have a better understanding of the requirements of vines and provide the correct spacing and give them proper care. The parral system of planting is most commonly employed in the table-grape sections. The vines are planted from 11½ to 18 feet apart, depending upon variety, soil, and the ideas of the individual grower. Sometimes parrals are laid out with rows 20 feet apart and vines from 10 to 13 feet apart in the row. They are trained to a stake. A strong trunk is developed about 6 feet high, and the canes are trained to overhead wires.

Cultivation, Cover Crops, and Fertilization

Orchard soil management varies according to district, individual ideas, and the financial condition of the grower. In general, one of two systems is employed. Some growers favor more or less continuous clean cultivation. After the harvest the land is plowed during the winter months. In the spring it is plowed again and cultivated throughout the summer to keep down weeds and grass. Light cultivations are continued until shortly before the harvest.

Other growers do not cultivate any oftener than is absolutely necessary, leaving the orchard in sod for indefinite periods. An orchard may be left in grass and weeds for 2, 3, or 4 years, after which it is plowed and clean-cultivated for 1 or 2 years. In some sections growers follow a combination of the above systems. Cover crops are used, which are sometimes turned under but more often than not are fed to livestock. Clover is the cover crop most generally used, and the tendency is to remove the first two or three cuttings, turning only the last one under. In addition to clover, arvejilla, clarincillo, and alfalfa are used.

Commercial fertilizers are used to some extent, but in small amounts. Most orchards show the lack of fertilizer. Guano, potassium nitrate, potash, phosphoric acid, and lime are the types most generally used.

As a fruit-growing country it is evident that Chile is neglecting some of its opportunities. Too much attention is paid to farming the land upon which orchards are planted, instead of feeding the trees and encouraging them to bear annual crops. Most soils are already deficient in humus and are being rapidly depleted. Many growers apparently realize the necessity of a better soil program but contend that they do not have the money with which to finance the required operations.

Thinning and Pruning

Thinning fruit is practiced on a very limited scale. A few growers practice thinning of stone fruits, such as peaches, plums, and apricots, but apples and pears are seldom, if ever, thinned. Most growers do not understand the benefits of thinning and are opposed to the practice. Apples in particular have a biennial-bearing tendency, and in heavy crop years they are allowed to produce all the fruit the trees can carry. Considerable breakage occurs despite the fact that orchards at times resemble a forest of props. There is no particular system or style of pruning that may be described as peculiar to the country. Every grower, more or less, follows his own ideas and cuts when and where he thinks the cuts will prove most effective. There is no uniform or established height at which trees are headed. Some are headed high, some low, depending upon the grower's fancy. Where grapes are used as an intercrop, trees are headed high in order to cultivate the vines. Where trees are grown alone, they are headed from 30 inches upward. In one orchard visited the trees were very low-headed; the first set of framework branches developed just a few inches from the ground.

Some growers are inclined to prune too heavily, whereas others do not cut enough, leaving weak, unproductive wood. The trees, being better spaced than those east of the Andes, do not require as much heading back to keep them within bounds. Nevertheless, the trees in most of the orchards visited do not produce as much vigorous growth.

Insect-pest and Disease Control

While Chile has several pests of some economic importance, climatic conditions on the whole are not especially favorable for their development. With a certain amount of spraying, pests and diseases are kept pretty well in check. Citrus fruits are affected largely by gummosis and brown rot. Stone fruits are attacked by leaf curl, Coryneum blight, powdery mildew, and black spot. Apples and pears are troubled chiefly with scab, codling moth, red spider, canker, mildew, and soursap disease, and grapes with black rot, mildew, crown gall, and phylloxera.

Treatment for disease and pests depends largely upon the locality, the grower, and the varieties of fruit produced. Stone fruits, as a rule, are given only a winter spray, but mildew has developed into a rather serious disease for which no effective means of control have as yet been devised. Apples and pears require a much more extensive spraying program. The recommended number of treatments varies, in some instances from 6 to 9; but in actual practice only about half of the recommended sprays are applied. Scab in the southern part of the valley is quite serious in some years; but in the north, where it is drier, the disease is not of economic importance.

Most growers in Chile are equipped with spray outfits, the larger orchardists using power equipment of standard North American makes. Judging by the quality of fruit produced, the results of spraying, on the whole, are effective.

Nurseries

The importation of nursery stock is very difficult and involves much red tape, which is avoided by most growers as well as nurserymen. As a result, the introduction of new varieties is not as common as it is in Argentina. The laws in Chile are intended to discourage importations and to foster home industry. Statistics dealing with tree nurseries in Chile are rather confusing and unreliable, but it is stated that the industry is capable of taking care of all requirements and that imported stock is unnecessary.

In addition to several large commercial nurseries, there are many small plots throughout the Central Valley which serve as a source of supply for neighboring areas. Many growers are also quite proficient in the art of plant propagation and raise what material is necessary for replants and extension of holdings. A large number of nurseries are located in the Province of Santiago, many of them on lots in the cities. According to the 1936 census, 156 nurseries in Santiago Province had a stock of 2 million trees. It is estimated that in 1935 these nurseries sold over 700,000 trees, of which fewer than 50 percent were placed in the Province of Santiago.

The El Vergel nursery at Angol is considered one of the best in the country. It has brought in new varieties from the United States and other countries and distributed them throughout the fruit-growing sections of Chile. Only 27 nurseries are listed as growing ornamental trees and shrubs, with stocks totaling around 800,000 plants. An important phase of the nursery business is the propagation and sale of forest trees. Forty-three nurseries are engaged in this business, combined sales running from 2 to 4 million trees annually. Lombardy poplars and eucalyptus trees are planted extensively over the country to serve as windbreaks and for making into box shook. They make a very rapid growth and in 8 to 10 years are large enough for cutting. The eucalyptus is said to thrive better in South America than in Australia, the country to which it is indigenous.

HARVESTING, STORAGE, AND MARKETING

Harvesting the fruit crop in Chile is usually performed at the proper time. Sometimes growers become impatient and remove the crop before it is ripe, but on the whole picking is delayed until the fruit has reached reasonable maturity. The harvest is a sort of holiday affair in which all members of the family participate. Men, women, boys, and girls, and even small babies join in the activities. They work in groups and roam about from place to place without any particular order or system. They work by the day, from sunup till sundown, and are never in any particular rush. Small boys with a pad on their shoulders carry boxes from the pickers to various concentration points. The fruit is loaded onto wagons pulled by oxen and is drawn to the packing house. The methods, although primitive, are nonetheless colorful. The foreman, dressed in a bright poncho and directing operations from the back of his pony, adds color to the picture. The wagons are heavy lumbering affairs and are pulled through the dusty, sandy soil by the ever-patient, plodding oxen. As in Argentina, harvesting operations are carefully carried out. Trees suffer very little damage through climbing or badly placed ladders, and care is taken to see that the fruit is picked with the stems.

Many of the larger orchards have their own packing houses, which are equipped with modern sizing machinery and the usual accessories. In some orchards large barns are used during the packing season, and in others special fruit-packing sheds are erected. The Government has built a very good packing plant at Huequén, near Angol, which packs most of the fruit produced in the community. This house is well constructed and well equipped.

In one large orchard visited the fruit is mechanically sized, but a large corps of women and girls is employed and supplied with cloths to do the necessary cleaning and wiping.

The actual packing of the fruit leaves much to be desired. While the box pack is the standard method, the labor employed is not sufficiently well trained to put up a high-class pack. The fruit is loosely wrapped and the pack in most instances is loose and slack. On the whole, however, the results could be much worse. The Chilean is a conscientious worker and anxious to learn, and certain defects that are more or less conspicuous today should be overcome as experience points the way.

Chile has ample storage facilities to take care of its immediate requirements. While a few small houses are located in the interior, the bulk of the storage space is in Valparaíso and Santiago. The plants have a capacity ranging from 4,000 to 200,000 boxes. Santiago plants have a combined capacity of about 100,000 and Valparaíso about 450,000 boxes.

Apples are generally held at 35° to 36° F. and pears at 33° to 34°. The temperature of the fruit when brought into storage is said to average from 66° to 72° and packers claim to reduce it to 32° to 36° within 48 hours. This rapid reduction in temperature is probably seldom accomplished, however, owing to the methods used in stacking the boxes. Very little stripping is used in separating them. In those storages visited by the writer, the boxes were stacked very close together, in fact almost as tight as possible, no allowance being made for air circulation and quick refrigeration.

The actual quantity of fruit stored varies from year to year, depending upon the size of the crop. The average, however, is approximately 325,000 boxes of apples and 23,000 boxes of pears.

The commercial producers of apples and pears are organized into a cooperative known as the Association of Producers of Apples and Pears of Chile (Asociación de Productores de Manzanas y Peras de Chile). It is considered the most successful organization of its kind in the country. Its members control about 80 percent of the commercial apple tonnage and about 85 percent of the pears. The association purchases and furnishes to its members at cost such orchard supplies as fertilizer, spray material, and picking and packing material.

The marketing of the fruit is handled by the South American Fruit Company (Compañía Frutera Sud-Americana) a selling organization with headquarters at Valparaíso and Santiago. A contract between the producers' association and the export company is negotiated annually. The export company handles, in addition to the association's business, a few individual accounts and is thus the largest fruit-selling agency in the country. Through an arrangement with the producers' association it makes cash advances to growers against growing and packing costs. It also employs a competent, well-trained horticulturist, who visits and consults with the growers on production and marketing problems.

About 90 percent of Chile's fruit exports are handled by the South American Fruit Company. This organization has its own box factories and supplies all the packing material used. It usually buys the fruit on the tree or vine. It deals in spray materials, fertilizers, and all kinds of orchard equipment. This company handles the crop in various ways. Sometimes the fruit is purchased outright on the trees, the buyer furnishing everything. Again it is bought on a packed basis. In some instances it is handled on a joint-account basis, in which case the grower is paid so much a pound on the tree or vine (a minimum guaranty about equal to production costs) and 50 percent of the net returns. In other words, the buyer and seller receive equal profits over and above expenses.

The purchasing power of Chile is pretty well concentrated in the cities of Santiago and Valparaíso; consequently the output of most farms finds its way to these cities. The smaller towns are supplied with fruit and vegetables from nearby farms. Even in the cities the wealth is unevenly distributed, and the average person is not in a position to pay much for his fresh-fruit requirements. In fact, he is not called upon to do so, as most fruit is available in good supply and at very low prices.

Owing to the climate of the Central Valley, Chile enjoys a long marketing season. Some kinds of fruits and vegetables are available throughout most of the year. While many farms produce two crops a year, some of the more favored locations are capable of growing annually three and even four crops on the same piece of land.

CANNING AND DRYING INDUSTRIES

The utilization of byproducts has not been overlooked in Chile, and considerable progress has been made in both the canning and the drying of fruits. Emphasis has especially been placed upon the preservation of stone fruits. While apples and pears are dried to some extent, peaches and raisins are dried in large quantities. According to the last census, 862 tons of stoned peaches, 2,258 tons of unstoned peaches, 615 tons of plums, 3 tons of cherries, 69 tons of pears, and 1,374 tons of raisins were dried in 1936. Since that time there has been some expansion, especially in peaches. A few apricots are also dried.

A large part of the drying plants are owned and operated by the Government. Most of them are located at Santiago, but there are some plants at Curicó and Angol. The former are in the stone-fruit district while those at Curicó and Angol are in the heart of the grape and apple districts, respectively.

The plants are not pretentious or operated on as large a scale as some in Argentina, but they are run on an efficient and sanitary basis. The sanitation in some of the small, privately owned plants is greater than that found in many similar plants visited in other South American countries.

In the State-owned drying plant at Los Andes various products are processed, but peaches predominate. A few apples and pears are dried and a very few plums. The plant handles from 26,500 to 33,000 pounds of fruit daily, with an annual output of about 2,200,000 pounds. The product is consumed in Chile with the exception of a small quantity of peaches, dried without stones, which is exported to Argentina. It takes 5.3 pounds of fresh peaches to make 1 pound of dried, when dried with the stone. When stoned, 8.3 pounds of fresh fruit are required to produce a pound of dried. The following varieties of peaches are dried in the Los Andes district: Saragassa, Phillips Cling, Reina Elena, Pomona, and Tonkinson. The plum varieties dried are D'Agen, President, and Imperial.

Dried peaches are sold largely in Santiago at an average of 3 pesos a kilogram (4 cents a pound). For unstoned fruit, prices are about as follows: First grade, 5.40 pesos a kilogram (7 cents a pound); second grade, 3.60 (5 cents); third grade, 1.80 (2½ cents). First, second, and third grades of dried stoned peaches sell, respectively, for 8 pesos a kilogram (12 cents a pound); 6 pesos (8 cents), and 4 pesos (5½ cents).

While canning in Chile does not compare in importance with the American industry, it is developing gradually and with quite satisfactory results. The quality of the canned product is good, and though exports have been small to date, they have been well received on European markets. The quality of the canned peaches is especially good.

Canned fruit is not likely to become very popular in Chile itself, as the markets are usually generously supplied with fresh fruits which can be purchased at very reasonable prices. From an export point of view, however, the canning industry has possibilities, owing to the high quality of the fresh product and the low production and operating costs.

The canning and drying industries in Chile are not expected to develop as rapidly or on the same scale as those in Argentina. Production is not increasing to the same extent; therefore the need for processing plants is not so great. The growth of canning and drying plants in Chile, like that of the industry itself, is expected to be slow and gradual.

The reduction of exports as a result of the war has stimulated an increased interest in processing. The utilization of apples in some form other than fresh has received special attention. The producers' association in 1940 sent its manager to the United States to make a study of processing apples. After his investigation, arrangements were made to purchase the machinery and equipment required in the manufacture of applesauce, apple juice, etc. It is anticipated that by 1942 facilities will be available for the processing of 100,000 boxes.

THE UNITED STATES IN RELATION TO THE CHILEAN FRUIT INDUSTRY

Because of its small population with very limited purchasing power, Chile offers but little encouragement as a market for United States fruit. High production costs and transportation charges on American fruit practically eliminate Chile as an outlet for any volume of fruit from the United States.

Domestic supplies of apples and pears are available in Chile throughout the greater part of the year, and during the off season the trade is supplied with canned and dried fruits, which are of good quality and cheap. Early fruits and vegetables are on the market when storage supplies are no longer available.

Since Chilean exports to neighboring South American countries have been decreasing and exports to Europe increasing, the European war is having a serious effect upon the industry. Supplies that are ordinarily destined for overseas markets have to be disposed of locally, which brings up the problem of wider distribution on local markets and extension of the marketing period.

With only about 4½ million inhabitants, nearly 25 percent of which live in two cities, Chile can boast of no large consuming centers. The envy of the average Chilean fruit grower is the market of 130 million people in the United States, all of whom are regarded as potential consumers of Chilean fruits. Instead of offering a market for American fruits, Chile is looking toward the United States as an outlet for its surpluses.

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